

**Community**

20

UNIVERSITY OF ALEXANDRIA  
FACULTY OF MEDICINE

Community Medicine Department  
Fourth Year Objectives Written Examination

Date: 23/6/2009

Time Allowed: Two hours

Total Marks 45

Part I

All question must be answered.

1- At Alexandria air port, one of the coming passengers has been presented with fever, coryza and cough, the physician suspected him for influenza.

- A- Mention types of influenza viruses.
- B- What are the commonest sub-types?
- C- Mention the type of influenza virus that is associated with sporadic cases and does not cause epidemic.
- D- Mention types of reservoir of influenza viruses.
- E- Describe the available influenza vaccines.

2- Enumerate methods of prevention and control of air pollution.

3- Mention the importance of incubation period.

4- Enumerate the preventive measures done in blood banks against HBV infection.

5- Enlist international measures for prevention of plague.

6- Enumerate factors behind the steady increase in secular trend of cancer.

8- Mention mode of transmission in:

- a- Brucellosis.
- b- Toxoplasmosis.
- c- AIDS



# 1) A,B,C

## Cycle of infection

### Agent

**Three types of influenza viruses** are recognized: A, B and C.

**Type A** (affect man and birds) has been associated with widespread epidemics and pandemics. **Type B** (affects man only) has been infrequently associated with regional or widespread epidemics.

**Type C** has been associated with sporadic cases and does not cause epidemic.

Influenza A sub-types are classified by the antigenic properties of surface protein

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called hemagglutinin (H) and neuraminidase (N). The commonest sub-types are (H1N1, H2N2 and H3N2).

Emergence of completely new sub-types (antigenic shift) occurs at irregular intervals and only with type A viruses. They are responsible for pandemics and result from unpredictable recombination of human and swine or avian antigens. The minor antigenic changes (antigenic drift) of A and B viruses are responsible for frequent epidemics and regional outbreaks.

### NOTE

Antigenic changes necessitate frequent updating of influenza vaccine components to ensure that the vaccine is matched to the circulating virus.

### Reservoir

**Man** is the reservoir for human infections. However, **bird reservoir** (turkey, ducks and chicken) **mammalian reservoir** (swine, horses) are likely sources of new human sub-types thought to emerge through genetic changes.

# 1) D

**Table 1 Influenza Vaccines main features**

Criteria	Inactivated vaccine	Live attenuated intranasal influenza vaccine
Type	Inactivated trivalent strains including 2 subtypes of A virus ( $H_3N_2$ & $H_1N_1$ ) one B strain virus.	Live attenuated trivalent vaccine (2 subtypes of A virus and one type B virus). Heat sensitive, requires adequate cold chain.
Dose and mode of administration	<p>-0.5 ml IM injection.</p> <p>For adult: single dose annually in deltoid region.</p> <p>For children: Two doses separated by 4 weeks in the anterior lateral aspect of the thigh.</p>	<p>0.5 ml given by intranasal spraying. Virus replicates in nasopharynx and stimulates the production of local &amp; systemic immunity.</p> <p>*It could be given before the peak of influenza (October, November).</p> <p>*It could be given with any other live vaccine as MMR</p>
Effectiveness	Between 70-90% and immunity declines after one year of vaccination. Annual revaccination	
Side effects:	Since the vaccine is prepared in eggs, hypersensitivity may develop. Fever and local inflammation at the site of injection and rarely Guillian-Barre.	
Indications:	<p>1-Persons aged <math>\geq 65</math> years.</p> <p>2-Any person with chronic debilitating diseases, Health care workers</p> <p>3-Children and adolescents (6 months - 18 years) who are receiving long term aspirin therapy.</p> <p>5- Immuno-suppressed including HIV</p>	For healthy persons aged 5-49 years. It is preferred than the inactivated vaccine as it is easy to be administered so accepted by the public.

**NOTE**



# 2)

## Epidemiologic importance of incubation period

- 1-Observe or isolate contacts of communicable diseases. Observation is usually equivalent to the maximum incubation period.
- 2-Apply preventive measures in certain diseases as:  
Measles vaccine if given to the contacts in the first three days after exposure it will prevent the disease.  
  
If given in the second three days after exposure it will modify the attack but result in solid immunity.
- 3- It helps in identifying the source of infection. A water borne epidemic of typhoid has longer incubation period than a milk borne epidemic while a shellfish borne typhoid has the shortest one.
- 4- In some diseases it can be used in estimating the prognosis of a disease. (E.g. tetanus and rabies), the shorter the incubation period is, the worse the prognosis of the disease.

# 3)

## 3. Blood and blood transfusion:

- All blood donors should be tested for [HBs Ag]
  - Reject all donors who have history of viral hepatitis, show evidence of drug addiction, or have received blood transfusion or tattoo within the preceding six months.
  - Use paid donors only in emergencies
  - Limit administration of unscreened whole blood or potentially hazardous blood products to those patients in immediate need for such therapeutic measures.
- Maintain surveillance for all cases of post transfusion hepatitis; keep a register of all persons who donated blood for each case, notify blood banks of these potential carriers so that future donation may be prohibited.



## 5) -----

### International measures:

1. Report to WHO and to adjacent countries of the first case of plague appears in area previously was free from the disease

2. Air and seaports and ships should be rat proof and rodenticides and insecticides should be periodically applied. Measures applicable to ships, aircraft, and land transport arriving from cholera endemic areas are to be applied within the framework of the revised International Health Regulations.

3. International travelers those that arrived from an area with (i) epidemic of pneumonic plague and suspected of significant exposure should be isolated for six days (International Incubation period) and (ii) epidemic bubonic should be disinfected and kept under surveillance for six days from the date of arrival

## 6) -----

**Time:**

The secular trend of cancer shows a steady increase not only of its incidence but also of its mortality. This steady increase could be explained by the followings:

- The development of better techniques for case-finding and detection.
- In the developed countries, communicable diseases have been largely controlled. Thus a marked decline in the incidence and deaths from these diseases occurred.
- Populations are showing now a marked increase in life expectancy with a greater risk of developing cancer, which is especially prevalent among older people.
- Changes in the life style and changes in the environment that lead to exposure to risk factors that lead to the development of cancer.

# 8) A -----

## **Mode of Transmission:**

### **1. Contact transmission:**

Most commonly infection occurs by direct contact with infected animals or their tissues, blood, placenta and aborted fetus.

### **2. Common vehicle:**

Infection may occur by ingestion of unpasteurized infected milk or milk products (soft cheese), also drinking water contaminated with excreta of infected animals could serve as a vehicle.

### **3. Airborne**

The environment of a cowshed may be heavily infected. Few people living in and working in this environment can escape inhalation of infected dust. Brucellosis may be inhaled in form of droplet nuclei in slaughter houses, meat processing plants and laboratories. These droplet nuclei may remain suspended in atmosphere.

# 8) C -----

## **Mode of Transmission**

1. Direct contact transmission through unprotected sexual intercourse

(vertical)  
2. Contact transmission from mother to child (trans placental during pregnancy, at the time of birth or after birth through breast-feeding)

3. Indirect contact transmission through the use of syringes, needles etc. soiled with blood.



UNIVERSITY OF ALEXANDRIA  
FACULTY OF MEDICINE

Community Medicine Department  
Fourth Year Final objective Written Examination

Date: 20/6/2009

(8)

(21)

Total Marks 45

Part II

All Questions must be answered:

- 1- Enumerate the temporary contraindications of vaccinations.
- 2- Mention factors to be considered during diet planning.
- 3- Define family planning and enumerate the objectives of its program.
- 4- Enumerate the most common non-communicable disease among school age children.
- 5- Enlist the peri-natal causes of child disability.
- 6- Mention the role of the industrial physician in the factory.
- 7- Infant mortality rate (definition and causes)

GOOD LUCK



# 1)

## II- Temporary contraindications to vaccinations (precautions)

These include the following:

- 1- Pregnancy: In Egypt, the only vaccine that could be given during pregnancy is tetanus toxoid. *only (inactivated only) other countries? mella vaccine X never in pregnancy*
- 2- Severe illness that needs hospitalization.
- 3- Immunosuppression: Live attenuated vaccines should not be given during immunosuppression. *what about killed? IP for measles 7 days*
- 4- Recent blood transfusion as it contains antibodies that neutralize the vaccine antigens. It is better to postpone live attenuated vaccines for 1-3 months after receipt of blood transfusion. *Abs are not blood turn over time not 1-3 months after receipt of blood transfusion*

# 3)

**FAMILY PLANNING PROGRAM**

Family planning enables people to make informed choices about their sexual and reproductive health

Family planning program is defined as organized activities to develop practice that help individuals or couples to attain the following

- a) To avoid **unwanted births**.
- b) To bring about wanted births.
- c) To regulate intervals between pregnancies (**Spacing**).
- d) To control time at which births occur in relation to parents age and periods of minimum reproductive hazards (**Timing**).
- e) To determine number of children in the family (**Size**).

### Objectives of Family Planning Program:

#### • Immediate:

1. Increase number of contraceptive users.
2. Decrease dropouts.

#### • Intermediate:

Changing the reproductive behavior towards a more healthful one through:

1. Timing of pregnancy (20-35 years).
2. Optimum spacing ( 2-3 years )
3. Preventing further births when family reaches the total desired number (2-3 children).

#### • Long term:

1. Reduce maternal mortality and morbidity.
2. Reduce induced abortion.
3. Reduce child mortality and morbidity.
4. Narrowing the demographic gap i.e. reducing rate of natural increase through controlling fertility.

# 4) -----

## II. **Early detection and correction of non-communicable diseases**

Most common non-communicable diseases among school-age children are:

1. **Nutritional problems:** e.g. overweight and obesity, underweight, stunted growth, deficiencies related to protein, vitamins, calcium and iron.
2. **Dental defects:** e.g. dental caries and diseases of gums.
3. **Errors of refraction** including myopia, hypermetropia and astigmatism.
4. **Hearing impairment:** due to frequent, inadequately treated middle ear infections.
5. **Adenoids.**
6. **Chronic health problems:** as rheumatic heart diseases, diabetes, epilepsy, and bronchial asthma.
7. **Postural problems:** as lordosis and kyphosis.
8. **Speech defects.**
9. **Emotional and behavioral** problems especially in adolescence.

6)

### Role of industrial physician:

The industrial physician is the key person in the occupational health team.

#### **His duties can be summarized in the following points:**

1. Perform the pre-placement medical examination.
2. Perform the periodic medical examination.
3. Emergency treatment of injuries.
4. Diagnose and treat occupational diseases.
5. Diagnose non-occupational diseases and treat mild conditions
6. Referral of chronic non-occupational diseases to a specialist
7. Rehabilitation of diseased workers.
8. Assess the degree of disability following occupational diseases and injuries and calculate the required compensation.
9. Health education.

7)

*Total number of live births in the same year and locality*

In Egypt, it was 18/1000 live births (UNICEF, 2012)

Infant mortality is universally recognized, not only as a sensitive indicator of health status of children, but also as an indicator of community development. It is a measure of the effect of the different environmental factors surrounding the infant during the first year of life. Poverty, bad sanitary conditions, overcrowding, poor nutrition and ignorance of mothers all contribute to infant deaths.

**The main causes of infant mortality are:** (Ordered by frequency)

1. ARI: acute respiratory infections; bronchitis and bronchopneumonia.
2. Gastroenteritis and dehydration.
3. Low birth weight and congenital anomalies.



UNIVERSITY OF ALEXANDRIA  
FACULTY OF MEDICINE

## COMMUNITY MEDICINE

امتحان مادة: طب مجتمعي

Time allowed: 2.30 hours.

الزمن: ساعتان ونصف ساعة

All questions to be attempted.

جميع الأسئلة إجبارية

## Part I

Give short account on:

- 1- Contagious source epidemic.
- 2- Classification of carriers.
- 3- Air born transmission.
- 4- Natural passive immunity.

Enumerate:

- 1- International measures for Yellow fever in infectable zone (receptive zone).
- 2- Prevention of hepatitis B.
- 3- Control measures for contacts of a meningococcal meningitis case.
- 4- Modes of transmission of measles.
- 5- Advantages of Sabin vaccine (OPV).
- 6- Control measures of Typhoid carries.
- 7- Preventive measure of Neonatal Tetanus.
- 8- Post-exposure prophylaxis measures in Rabies.
- 9- Microbial food poisoning.



2)

## Classification of carriers

### 1-According to place of carriage

- a. Upper respiratory carriers as in case of diphtheria, streptococcal and meningococcal infections.
- b. Fecal carriers as in case of typhoid, paratyphoid, cholera, and infectious hepatitis.
- c. Urinary carriers as in case of typhoid and paratyphoid.
- d. Skin carriers as in case of staphylococcal infection.

### 2. According to duration of carriage:

- a. Transient carrier: A person who harbors and excretes the infectious organisms up to weeks.
- b. Temporary carrier: A person who harbors and excretes infectious organisms up to 3 months (one year for enterica). Most of the carriers (about 95%) are of the temporary type. 3 months
- c. Chronic carrier: A person who harbors and excretes organisms for more than 3 months (more than one year for enterica) > 3 months
- d. Permanent carrier: A person who harbors and excretes the infecting organisms for life (e.g. Salmonella typhi, hepatitis B virus and HIV). For life

### 3. According to the spectrum of infection (Chronologically)

- a. Incubatory carrier: A person who harbors and excretes the organisms during the incubation period (e.g. hepatitis A, mumps and poliomyelitis).

b. Convalescent carrier: A person who discharges the agent of disease during convalescent period (e.g. typhoid). Here there will be a need for carrying out 3 consecutive bacteriological examinations before release of the cases.

c. Contact carrier: A person who is in contact with an infected person as doctors, nurses, family, members as well as servants. Contact carriers are of transient type, usually the period of carriage ends as soon as the patient is cured or the contact is over (e.g. cholera and typhoid).

For life (pink)

## Figure 2 Air borne transmissions

This involves the dissemination of suspended particles in the air consisting partially or wholly of microorganisms. They remain suspended for a long period of time (the reservoir and the host may not be in the same room). Some organisms retain their infectivity (as TB and hemolytic streptococci) and the others do not.

Air-borne transmission can be:

### 1- Droplet nuclei:

These are small particles (1-10 microns range) that result from evaporation of the

fluids from the droplets of infected person. They contain pathogens and remain suspended in air for a long period of time. Particles in the 1-5 micron range are liable to be easily drawn into the alveoli of the lungs and remain there. When they are inhaled by a susceptible host they cause infection. Diseases that spread by droplet nuclei include tuberculosis, influenza, chicken pox, measles, Q fever and many respiratory infections.

### 2-Dust nuclei:

This mode of transmission is most common in hospital-acquired infection (Nosocomial infection). The large particles by their sheer weight fall on the floor, carpets, furniture, clothes, bedding, linen etc. and become part of dust. Some of the organisms resist drying for a long time and may survive in the dust (e.g. tubercle bacilli may survive in the dust for considerable periods under optimum conditions of temperature and moisture). Diseases transmitted by dust include streptococcal and staphylococcal infection, tuberculosis, Q fever and psittacosis. Airborne dust nuclei are primarily inhaled, but may settle on uncovered food and milk.



4)

b) **Acquired resistance (immunity):** This depends on antibodies production. Immunity may be:

### 1. **Passive immunity:**

Passive immunity is the type of resistance in which ready-made antibodies are gained.

#### a) **Natural passive immunity (infant immunity):**

It is the resistance of infant due to the presence of antibodies passed from the mother to the fetus via the placenta. The mother should have acquired the infection and / or had the vaccine and developed specific antibodies against certain diseases. These passive acquired antibodies in the fetus are at their highest level at birth, and then start to decline gradually until they are insignificant usually by the end of six months. 6 months

Such natural passive immunity in the infant could be induced artificially by immunizing the mother during pregnancy, as in case of immunization by tetanus toxoid to protect the newly born infant against tetanus neonatorum. Breast milk, especially the colostrum, contains plenty of antibodies (immunoglobulin account for about 95% of the protein in colostrum). Antibodies are continually secreted in breast milk but at a lower level than that of colostrum.

1)

#### **B-Infectable (Receptive) zone**

The following must be done to prevent the disease entry:

##### 1. **Ports and airports**

All planes and ships coming from infected areas should be disinfected.

##### 2. **Individuals:**

-Travelers carrying valid vaccination certificates are allowed to enter and if not or if they were vaccinated since less than ten days they should be put in quarantine to complete the six days.

-Yellow fever patients must be isolated under mosquito net for five days.

##### 3. **Monkeys and apes:**

Monkeys and apes should be kept in quarantine for seven days.

##### 3-International travel:

A valid international certificate of immunization against yellow fever is required by many countries for entry of travelers coming from or going to recognized yellow fever zones of Africa or South America otherwise, quarantine measures are applicable for up to six days.

2)

and HBs Ag disappears.

## Prevention:

### 1. Vaccination

The current WHO **hepatitis B** prevention strategy is based on routine universal newborn or infant **immunization**. (Please refer to EPI). Vaccination of adolescents is also valuable as it **protects** against transmission through **sexual contact** or **injecting drug** use.

The vaccine used is **the Recombinant hepatitis B vaccine**:

It is a subunit HBs Ag containing vaccine. It is prepared by genetic engineering and does not contain any viral particles. The vaccine should be kept at 2- 8° C. It **should not be kept frozen**.

### Dose and administration:

- The vaccine should be given 0.5 ml IM in the deltoid region in adults and in the anterior lateral aspect of the thigh in infants.
- It should be administered in three doses; initially, one and six months later for adults. For infants. 0, 2, 4, 6
- Boosters are not required except in **Hemodialysis patients**.



Immunity against HBV is believed to persist for at least 15 years after successful immunization.

### Adverse events following immunization:

The following was observed: local pain at the site of injection, mild systemic symptoms such as fatigue, mild fever and headache.

### Who should receive the vaccine?

- Infants: The vaccine is given as part of compulsory vaccination during the first year of life.
- Health care personnel especially those who come into contact with blood and secretions.
- Patients who require repeated blood transfusion or clotting factors.
- Hemodialysis patients.
- Infants born to mothers having history of HBV infection. Prisoners
- Sexual contacts of HBV patients or carriers

### 2. Immunoglobulin:

Immunoglobulin is indicated in combination with the vaccine in case of:

- Sure sexual exposure,
- Accidental exposure (percutaneous or per mucosal).
- Perinatal transmission: for the baby born from mother who is HBV case or carrier.

### 3. Blood and blood transfusion:

- All blood donors should be tested for [HBs Ag]
- Reject all donors who have history of viral hepatitis, show evidence of drug addiction, or have received blood transfusion or tattoo within the preceding six months.
- Use paid donors only in emergencies
- Limit administration of unscreened whole blood or potentially hazardous blood products to those patients in immediate need for such therapeutic measures.



# 3)

## 5. Measures for contacts

- Enlistment and surveillance, for 10 days, of household and other intimate contacts for early signs of illness, especially fever should be done. This is needed to initiate appropriate therapy without delay.
- Chemoprophylaxis should be given to all close contacts in the institutions and schools (rifampicin or Ciprofloxacin). Dose of Rifampicin for adults: 600 mg twice daily for two days. For infants below 1 month give 5mg/Kg twice daily for two days. For infants above 1 month the dose is 10 mg/kg twice daily for two days.
- Health education should be carried out to motivate them to report any rise in temperature and to comply with chemoprophylaxis given.

# 4)

### Mode of transmission:

Measles is one of the most communicable infectious diseases. It spreads by:

- Droplet transmissions where droplets spray are deposited onto the mucous membrane of the nose and mouth.
- Indirect contact with articles freshly soiled with secretions of nose and throat.
- Less commonly by air borne.

5)

- Useful to control epidemics even with single dose
- Easy manufacture and administered
- cheap
- The vaccines excrete the virus with their feces and so infect contacts, thereby they become immune (Herd immunity)



## 1. Identify typhoid carriers

a. The **organism should be isolated from urine and feces** If these are repeatedly negative, bile or duodenal aspirate can be used especially among females suffering from chronic cholecystitis

b. **Vi antibodies** present in a titer of more than 1:10 is also suggestive of chronic typhoid carrier.

## 2. Apply control measures

a. **Exclude** typhoid carriers from handling food, from providing patient care, and put them under surveillance. **Chronic carriers should not be released from supervision and restriction of occupation until three consecutive negative stool cultures** (and urine in schistosomiasis endemic areas) taken at least 1 month apart and at least 48 hours after antimicrobial therapy has stopped. Fresh stool specimens are preferred to rectal swabs; at least 1 of the 3 consecutive negative stool specimens.

b. **Chemoprophylaxis:** elimination of a chronic carrier state requires prolonged use of antimicrobial agents (ampicillin or amoxicillin) in high doses. In patients with chronic gallbladder disease, antimicrobial agents alone may be ineffective, and cholecystectomy is necessary. Patients with concurrent urinary tract disease (Bilharziasis) should receive Praziquantel to eliminate possible carriage of *S. typhi* by the schistosomes. However, follow up cultures are necessary to confirm cure.

c. **Health education** about personal hygiene. Emphasize hand washing as a routine practice after defecation and before preparing, serving or eating food.

d. **Vaccination** of household contacts of chronic carriers.



## I- Immunization

Active immunization with tetanus toxoid gives solid protection. It is indicated for:

a. Infants: it is given with diphtheria and whooping cough vaccine (DPT) at the end of second, fourth, and sixth month of age.

b. Preschool children: a booster dose of DPT at 18-24 months of age.

c. School pupils: Td is given at the 4<sup>th</sup> primary.

d. Adults: A booster dose of Td is needed every 10 years.

e. Those that are at risk: tetanus toxoid can be given at any age, for workers in contact with soil, sewage or domestic animals, members of military forces, policemen and others with greater than usual risk of traumatic injury.

The schedule for previously non immunized individuals (>7years): a primary series of 3 doses of TD is given. The first 2 doses are given at 4-8 weeks interval and a third dose 6-12 months after the 2<sup>nd</sup> dose.

f. Those injured: It is given in addition to proper wound management and debridement with removal of foreign matter from wounds by thorough cleaning of any devitalized or necrotic tissue. The following table is a summary guide for tetanus prophylaxis:

**Table 3 Administration of tetanus immunization in case of injury**

History of tetanus immunization (doses)	Clean minor wounds		All other wounds	
	Td	#TIG	Td	#TIG
No Immunization	Yes	No	Yes	Yes
Uncertain or < 3				

g. For women in the reproductive age: It is given to prevent neonatal tetanus. The recommended immunization schedule consists of five doses of tetanus toxoid (TT), respecting the minimum interval between doses will provide immunity through a woman's childbearing years. (Refer to reproductive health part 2)

## B-Post exposure measures

The aim of post-exposure prophylaxis is to neutralize the inoculated

5 doses + 1 dose after 3 months

no amplification ← Use

tetanus & antitoxin 3; could cause allergy or anaphylaxis →

fore it enters the nervous system. Every instance of human exposure should be treated as medical emergency. Care should include:

### 1-Local treatment of wound

1. Clean the wound immediately by washing with soap and water, and avoid making any additional trauma
2. Apply antiseptic to the site of bite.
3. Don't suture the wound to prevent additional trauma that leads to the spread of the virus to the torn blood vessels.
4. Apply locally half the dose of the immunoglobulin antirabies within the 1st 24 hours. The other half should be given **IM** injection. It is better than the horse antiserum as it has no risk of anaphylaxis; however it is expensive. Its aim is to establish rapid immunity and prolong the incubation period i.e. delay the fixation of the virus to the CNS until the vaccine works.

### 2. Immunization

Five doses at 0, 3, 7, 14, 28 days and a booster dose after 90 days



## II. Microbial food poisoning:

There are two types of microbial food poisoning the infectious type and the intoxication type.

### a) Infectious type:

It is due to intake of food contaminated with **Salmonella organisms**, other than those causing typhoid and paratyphoid fever.

### b) Intoxication type:

It is due to intake of food contaminated with agents liberating an **exotoxin** in the food or drink outside the body. Examples of this type are food poisoning caused by:

- **Staphylococcus aureus:** (enterotoxin producing strain with selective action on the gastro- intestinal tract.
- **Clostridium botulism:** It liberates a neurotoxin with selective action on nervous system
- **Clostridium perfringens** {type A strains(C. Welchii)} : It liberates an **enterotoxin**.





- 1- Compare between population pyramid in developing & developed countries.
- 2- Enumerate the different elements (functions) of PHC centers.
- 3- Describe briefly, the rural health problems in Egypt.
- 4- Enumerate objectives of family planning program.
- 5- Give an account on national immunization days.
- 6- Outline biological risk factors in a pregnant female.
- 7- List the immediate preventive measures done for a newborn during natal care.
- 8- Give reasons why communicable diseases are common among school children.
- 9- Define infant mortality (write the formula) and mention the main causes of deaths.
- 10- Enumerate 6 duties for an industrial physician.
- 11- Mention different screening tests for a pre-school child.
- 12- Enumerate investigations that should be done during pre-marital care.

Good luck

# 1)



<u>Developed communities</u>	<u>Developing communities</u>
Narrow base of the pyramid, due to low birth rate. ↓ birth rate	Wide base of the pyramid, due to high birth rate.
Sides are not sloping. Constant numbers of people through all bands of working age indicating low age specific mortality. ↓ mortality	Sides are <u>sloping</u> . Numbers decrease as you go up the pyramid, forming the triangular shape of the pyramid indicating high age specific mortality rates.
Height of the pyramid is tall indicating high life expectancy. ↑ expectancy	Height of the pyramid is short indicating a low life expectancy. ↓ expectancy
Apex is wide which means <u>large number</u> of people over 60. ↑ health care	Apex is narrow indicating that few people <u>survive to old age</u> .

# 2)



## Elements of primary health care:

1. Health education regarding prevailing health problems and their prevention and control measures.
2. Provision of adequate environmental sanitation.
3. Promotion of food supply and proper nutrition.
4. Immunization of children.
5. Provision of comprehensive maternal and child health care and family planning services.
6. Prevention and control of endemic diseases
7. Appropriate management of common diseases and injuries.
8. Provision of adequate drugs.



## **Rural Health Problems in Egypt:**

### **I. Problems related to Vital Events:**

- a. Births: High crude birth rate.
- b. Deaths: High mortality rates, especially maternal and child mortality rates.
- c. Life expectancy: Short.

### **II. Morbidity:**

- a. Epidemics: if they occur will be more intense in rural areas (e.g. hepatitis A).
- b. Endemic diseases are numerous (e.g. trachoma, ophthalmias, streptococcosis, gastro-enteritis, amoebiasis, ascariasis, schistozomiasis).
- c. Nutritional diseases: The most common nutritional diseases in rural Egypt are: anemia, rickets, protein energy malnutrition, aribofavinosis, vitamin A deficiency, and pellagra.
- d. Health problems related to agriculture such as parasitic infestation, zoonotic disease (brucellosis, anthrax), injuries due to increased agricultural machinery, intoxication by pesticides and occupational lung diseases due to inhalation of organic dusts as cotton dust that leads to byssinosis.

### **III. Problems related to the delivery of Health Care:**

#### **1. Problems related to the consumers:**

- a. Low utilization of preventive services such as family planning ,maternity care and child care (except for compulsory immunization).
- b. Low utilization of the available beds in health care centers.
- c. Inadequate community participation.
- d. High morbidity and mortality especially among mothers and children.

## HEALTH CARE SERVICES

- e. Increased rates of illiteracy and lack of awareness about health problems and factors behind them.
- f. Sustained unhealthy life styles as lack of personal hygiene and inappropriate food consumption, etc.

### **2. Problems related to health care itself:**

- a. Inadequate human resources (health care workers):
  - Inadequate performance due to unsuitable working conditions, low salary, lack of motives and training.
  - Shortage of skilled nurses and technicians
  - Mal-distribution of manpower as physicians.
- b. Inadequate non-human resources: Shortage of drugs, equipment, transportation facilities, electricity as well as limited and inequitable resources allocated for preventive activities.
- c. Insufficient coverage of population by basic environmental services and emerging other environmental health determinants such as pesticides and fertilizers.
- d. Low outreach for all services .
- e. Poor and inadequate referral system.
- f. Limited multi-sectorial approach.





## Objectives of Family Planning Program:

### • Immediate:

1. Increase number of contraceptive users. ↑
2. Decrease dropouts.

### • Intermediate:

Changing the reproductive behavior towards a more healthful one through:

1. Timing of pregnancy (20-35 years).
2. Optimum spacing ( 2-3 years)
3. Preventing further births when family reaches the total desired number (2-3 children).

### • Long term:

1. Reduce maternal mortality and morbidity.
2. Reduce induced abortion.
3. Reduce child mortality and morbidity.
4. Narrowing the demographic gap i.e. reducing rate <sup>RNI</sup> ↓ of natural increase through controlling fertility.



large immunization schedules *what's the solution?*

*Don't only rely on season for solution*

### III. National Immunization Days (NIDs):

*why?*

It is periodic immunization of all eligible targets in a defined age group over large geographic areas within a short period of time. NIDs are part of the strategy for polio eradication as well as tetanus and measles elimination.

#### Criteria for successful Polio National Immunization Days

- a- OPV is given to all children in the age group 0-59 months to attain high coverage within 1-3 days.
- b- It is conducted at least in **two rounds** (4-6 weeks apart).
- c- Doses of OPV given are considered extra-doses and do not replace the routine doses given during infancy.
- d- NIDs are conducted during low season of polio transmission.
- e- Conduct NIDs annually for at least three years and until polio is reduced from being an endemic disease to a disease that occurs only in focal areas.

6)

## A) Biological risk:

### 1- Maternal age:

The optimal age for childbearing is between 20 and 30 years, with steadily increasing risk of prenatal mortality when the woman is over 35 years of age.

i) Maternal age less than 16 years of age increases risk for:

- Premature births. <sup>37 weeks</sup>
- Pre-eclampsia and eclampsia.
- Intrauterine fetal death.
- Uterine dysfunction. <sup>contraction ↑ through pregnancy</sup>

ii) Maternal age over 35 years of age increases risk for:

- First trimester abortion.
- Genetically abnormal conception: increase incidence of Down's syndrome. <sup>most important risk factor</sup>
- Maternal and fetal death.
- Medical complications (as hypertensive disease of pregnancy and diabetes mellitus)
- Difficult labor (as increased breech presentations, abnormal labor). <sup>↑ cephalic version</sup>

### 2- Paternal age:

There is an increased risk of genetic abnormality with advanced paternal age (over 55 years).

<sup>high risk for chromosomal</sup>

### 3- Birth order:

Maternal risk is slightly greater with the first pregnancy and is greatly significant beyond the fifth pregnancy. <sup>chromosomal (abnormal)</sup>

### 4- Inter-birth interval:

More than 10 years or less than one year is considered a risk pregnancy.

### 5- Maternal height:

Short stature of the mother (less than 151 cm) has been associated with increased prenatal morbidity and mortality. <sup>narrow pelvis</sup>



# 7) -----

## Preventive natal care

### Care of the newborn

Clearance of respiratory passages.

Aseptic cut of umbilical cord and use sterile dressing.

Apply silver nitrate or sulfa eye drops. *disinfectant eye drops*

### Care of the mother

Administration of chemoprophylaxis.

Application of external clean lavage and sterile dressing.

Specific preventive care (refer to maternal morbidity)

*ملاحظة*  
**Rooming in is recommended.** This term means keeping the newborn beside the mother immediately after delivery. This is done to ensure early initiation and successful breast feeding and to decrease the chance for spread of nosocomial infections.

# 8) -----

**school pupils are more liable to communicable diseases due to the following reasons:**

1. They are vulnerable group and have low immunity level
2. They are gathered in schools from different localities and with different health problems.
3. They might adopt unsound health practices (e.g. uncovered sneezing or coughing, sharing head caps or eating utensils or might have dirty hands).
4. Overcrowding at school and in classrooms contributes to transmission of respiratory diseases.

9)

*Total number of live births in the same year and locality*

In Egypt, it was 18/1000 live births (UNICEF, 2012)

Infant mortality is universally recognized, not only as a sensitive indicator of health status of children, but also as an indicator of community development. It is a measure of the effect of the different environmental factors surrounding the infant during the first year of life. Poverty, bad sanitary conditions, overcrowding, poor nutrition and ignorance of mothers all contribute to infant deaths.

**The main causes of infant mortality are:** (Ordered by frequency)

1. ARI: acute respiratory infections; bronchitis and bronchopneumonia.
2. Gastroenteritis and dehydration.
3. Low birth weight and congenital anomalies.

10)

**His duties can be summarized in the following points:**

1. Perform the pre-placement medical examination.
2. Perform the periodic medical examination.
3. Emergency treatment of injuries.
4. Diagnose and treat occupational diseases.
5. Diagnose non-occupational diseases and treat mild conditions
6. Referral of chronic non-occupational diseases to a specialist
7. Rehabilitation of diseased workers.
8. Assess the degree of disability following occupational diseases and injuries and calculate the required compensation.
9. Health education.

# 11)



**Screening tests should include the following:**

- i. Measuring weight and height to assess pupils' growth.
- ii. Measuring visual acuity.
- iii. Measuring hearing acuity.
- iv. Detecting pupils with speech defects.
- v. IQ assessment.
- vi. Postural screening should be performed at least once for all preparatory school pupils. This is done to reveal body posture abnormalities
- vii. Mental health screening:

**Two important assessment tests are conducted at schools:**

- a. Assessment tests for depression in the first preparatory grade.
- b. Assessment tests for anxiety in the first secondary grade.

**Data obtained are added to the health record**

# 12)



كرر





16

UNIVERSITY OF ALEXANDRIA  
FACULTY OF MEDICINE  
Community Medicine Written Examination (Test Form A)  
امتحان مادة طب المجتمع (نموذج أ)

Date: 26/5/2020  
Time Allowed: TWO hours  
All question to be attempted.

التاريخ: ٢٠١٠/٦/٢٦  
الزمن: ساعتان  
جميع الأسئلة إجبارية  
الامتحان في ورقتين

Part I

- 1- Explain the following statements;
  - A) Occupation is related to disease occurrence in several. (5 marks)
  - B) Infection can be possible aetiology of specific cancers (4 marks)
- 2- State control measures applied to:
  - A) contacts of cases of Meningococcal meningitis. (3 marks)
  - B) Pregnant contacts to cases of German Measles. (3 marks)
- 3- List five hazardous health care wastes with only one example for each. (5 marks)
- 4- Mention conditions that must be fulfilled before a country is certified as polio free.
- 5- Enumerate the modes of transmission of Toxoplasmosis. (6 marks)
- 6- List measures of prevention of brucellosis. (4 marks)
- 7- Identify four personal factors that affect distribution of malaria in a region. (4 marks)
- 8- State four indications of hepatitis B vaccination. (4 marks)
- 9- Discuss briefly measures applied to a person by a dog that escaped. (6 marks)

# 1) B -----

## b) Infection:

*Schistosomiasis (urinary bladder)*

Several studies indicated that specific viral and parasitic infestation may be related to specific cancer. Examples of **viruses** associated with cancer are

- Hepatitis B virus is causally related to hepato-cellular carcinoma.
- Epstein-Barr virus (EBV) is associated with Burkett's lymphoma and nasopharyngeal carcinoma.
- Human papilloma virus (HPV) is a suspect in cancer cervix.
- Hodgkin's disease is also believed to be of viral origin.
- Parasitic infection may also increase the risk of cancer, as example schistosomiasis and urinary bladder cancer *Human T cell*

# 2) A -----

## 5. Measures for contacts

- Enlistment and surveillance, for 10 days, of household and other intimate contacts for early signs of illness, especially fever should be done. This is needed to initiate appropriate therapy without delay.
- Chemoprophylaxis should be given to all close contacts in the institutions and schools (rifampicin or Ciprofloxacin). Dose of Rifampicin for adults: 600 mg twice daily for two days. For infants below 1 month give 5mg/Kg twice daily for two days. For infants above 1 month the dose is 10 mg/kg twice daily for two days.
- Health education should be carried out to motivate them to report any rise in temperature and to comply with chemoprophylaxis given.



## 2) B -----

### 4. Investigation of contacts and source of infection:

#### A) Pregnant contact:

- Identify pregnant contacts particularly those in the first trimester and put under surveillance for the incubation period.

- Laboratory investigation. If she has IgM or a rising IgG, it is an indicator of recent infection. They are either given immunoglobulin or abortion is done.

#### B) Children contacts:

Put them under surveillance.

No active or passive immunization is indicated.

## 3) -----

**1. Infectious waste:** This contains pathogens (bacteria, viruses, parasites or fungi) in sufficient concentration to cause diseases in susceptible hosts.

**2. Pathological waste** :(anatomical parts) It consists of tissues, organs, body parts, human fetuses.

**3. Sharps** :including needles, scalpels and other blades, knives, infusion sets, broken glass and nails.

**4. Pharmaceutical waste:** It includes expired unused and contaminated pharmaceutical products, drugs, vaccines and sera that need to be disposed of appropriately.

**5. Geotaxis waste:** Geotaxis substance is that causes DNA damage. It has mutagenic, teratogenic, or carcinogenic properties as drugs used in chemotherapy of cancer in oncology and radiotherapy units.

**6. Chemical waste:** It consists of discarded solid, liquid, and gaseous chemicals, result from diagnostic, experimental work, cleaning and disinfecting procedures. They are hazardous because they are toxic, corrosive, and flammable, explosive.

**7. Waste with high contents of heavy metals:** Mercury waste is generated from broken clinical equipment like thermometers, and residues from dentistry. Cadmium waste come from discarded batteries while lead is used in radiation proofing of X-ray.

**8. Pressurized containers:** They are the store of many gases used in health care. They should be handled with care as they may explode if incinerated or accidentally punctured.

**9. Radioactive waste:** Ionizing radiations are used in therapeutic or diagnostic health care.



4)

**The following conditions were fulfilled for being certified as polio free:**

- 1- Reporting Zero Polio cases for at least the three past years.**
- 2- Adequate strategy to detect, report and respond to any discovered case of polio.**
- 3 - Adequate surveillance system for AFP.**

6)

#### **1. Eradicating the disease from domestic livestock:**

This is cost beneficial to a country's economy in the long term because of increased livestock productivity. Eradication efforts include:

- Search for infected animals by serologic testing and by milk ring test.
- Segregate and slaughter infected animals from the herd.
- Vaccinate animals. Successful vaccines are available for cattle, sheep, and goats but not yet for swine.
- Hygienic measures that comprise provision of a clean sanitary environment for animals, sanitary disposal of urine and feces, veterinary care of animals.

#### **2. Pasteurization of milk:**

Milk products should only be manufactured from pasteurized safe milk. This simultaneously controls other milk borne diseases, such as salmonellosis and tuberculosis.

#### **3. Health education:**

Educate the public not to drink untreated milk or milk products made from unpasteurized milk.

#### **4. Education of occupationally exposed personnel**

Orient personnel about the nature of the disease and the danger of handling cases or products of infected animals. They should be motivated to wear protective long rubber gloves during obstetric procedures on livestock and when handling carcasses.

7)



## Descriptive Epidemiology

### Person

In non-endemic areas, malaria don't respect age or sex. In endemic areas children < 2 years of age suffer acute attacks. Men and women are equally affected.

It is a mild illness In individuals with sickle cell anemia. However during pregnancy it is a severe disease and may cause intrauterine fetal death or abortion.

Malaria is a disease associated with agriculture. Also, people living under poor socioeconomic conditions are at risk particularly those living in ill ventilated, ill lighted houses (suitable indoor resting places for mosquitoes). Malaria is common among people refusing spraying of their homes and refusing to use personal protective devices.

Migration internal and external has a great effect on the global malaria situation. Internal migrants carry parasites in their blood and reintroduce malaria into areas where malaria has been eradicated. External migration Imported malaria has become a public health problem in Europe, and other temperate parts of the world. This is due to the rise of air travel, tourism and migration.

8)



### Who should receive the vaccine?

- Infants: The vaccine is given as part of compulsory vaccination during the first year of life.
- Health care personnel especially those who come into contact with blood and secretions.
- Patients who require repeated blood transfusion or clotting factors.
- Hemodialysis patients.
- Infants born to mothers having history of HBV infection. Prisoners
- Sexual contacts of HBV patients or carriers

risk groups



Part II

(17)

(12)

1- Discuss briefly maternal mortality (causes, reason for dramatic reduction in Egypt)

Write the formula of maternal mortality Ratio

2- Interactive Health Education session was held in the MCH center about family planning. Women were allowed to present their opinion.

A- what is the method (approach) of health education used in this situation.

b- mention five rules for this method to be useful.

c- Give an example of ONE audiovisual aid that can be used during this session.

3- Discuss briefly the new reform of the elements of the primary health care.

4- Give short accounts on the National Immunization Days as one of the strategies of the vaccine delivery (give an example)

5- Discuss briefly the long and the short term interventions as preventing measures for vitamin a deficiency.

6- Give short accounts on: General fertility Rate (write its formula, what does it measure, mention two points of weakness)

7- Discussion to practice breast feeding should be taken during prenatal period, Mention six breast feeding guidelines.

8- Application of screening tests is one of the components of the school health appraisal.

a- What is the aim of the screening tests.

b- Who are responsible to carry out them?

c- List Five screening tests to be carried out for school pupils.

9- Mention eight causes of death among elderly in Egypt.

10- The industrial physician is the key person in the occupational health learn, Mention six of the duties of the industrial physician.



## 1. Maternal mortality ratio and rate

**Maternal mortality ratio** is the number of maternal deaths per 100,000 live births.

**Maternal mortality rate** is the number of maternal deaths per 100,000 women aged 15-49 years.

A **maternal death** is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management. It **does not include deaths from accidental or incidental causes.**

Almost 99% of these deaths occur in developing countries, where 60% of all maternal deaths after delivery, 24% during pregnancy and 16% during delivery.

### Causes of maternal death:

#### A) Direct obstetric causes

1- Hemorrhage (antepartum and post partum)

2- Eclampsia

3- Puerperal sepsis.

4- Obstructed labor.

5- Induced abortion.

#### B) Indirect obstetric causes:

Death resulting from previously existing diseases that are aggravated by pregnancy e.g. heart disease, anemia, chronic hypertension and diabetes.

In Egypt in 2007 direct causes were responsible for 69.5% of deaths and indirect causes for 30.5%. Hemorrhage ranked the first direct cause of death, (responsible for 38.5% of all deaths) and high blood pressure disease ranked the second (16.7%). Heart and artery diseases ranked the first indirect cause According to

the Ministry of Health, maternal mortality was 174 deaths for 100,000 live births in 1992, and had a steady decline from 84 deaths for 100,000 live births in 2000 to 59 deaths/ 100,000 live births in 2006. In the year 2015 it is projected to be 21.3 deaths for every 100,000 live births. This dramatic decline was due to a) Improvement of the quality of obstetric care, b) increasing access to family planning and motivating women to seeking medical care as early as possible.



Sharing : \$ = 0  
Solve Problem : \$-6  
Change attitude =  
Solve : 2-3  
② Health  
③ Grp. disc.

## Rules of selecting educational methods

- 1- Select a **minimum of three** educational methods for any health education session.
- 2- One of these methods should be a method other than personal communication as **posters, flipcharts, real objects or models, films, tape recorders etc.** to supplement and reinforce the personal communication methods used.
- 3- The **longer**, the health education program (both in terms of hours and number of sessions), **the greater the number** of educational methods that should be used.
- 4- A program best begins with a **communication strategy**. This is usually simple and less expensive. Health educators should use the simplest and cheapest educational methods first as health talks, individual instructions and other methods as posters, flip charts that influence predisposing factors. If these are not successful, he can use as well small group discussion, role play and community organization methods. The latter can affect reinforcing and enabling factors.
- 5- The **more complex** the causes of the behavioral problem, **the greater** the range of strategies that will be required.

3)



**The new reform of the elements of PHC:**

1. Maternal and child health care should be expanded to **include reproductive health**.
  2. The previous focus on the **control of communicable disease is expanded** to include:
    - Non-communicable diseases, mental health problems and addiction.
    - Eradication and elimination of certain communicable diseases (e.g. poliomyelitis eradication and measles elimination).
    - Control of emerging diseases e.g. HIV and reemerging diseases e.g. TB.
  3. Food supply and proper nutrition should be expanded to include **food safety**.
  4. Basic environmental sanitation should be expanded to include **emerging environmental problems** (air pollution, ozone depletion, industrialization).
- Introduction of the pri-

4)





6)

## 2. General fertility rate (GFR)

It is a **refinement of the crude birth rate**. It relates births to women in the child bearing period (15-49 years). It eliminates the influence of the difference in the proportion of males in the population.

It is the number of births in a certain year per 1,000 females in the child bearing period (15-49 years) in the same area and year.

GFR = 
$$\frac{\text{Total number of live births in a certain year and locality}}{\text{mid-year reproductive female population (15-49) in the same year \& locality}} \times 1000$$
  
(= ...Live births/1000 female population aged 15-49 years). *in a year*

**The weakness of GFR is that it does not take into account:**

- (a) Marital status.
- (b) Differences in fertility levels in various age groups of reproductive period.

## a. Breast-feeding

Breast milk is the perfect food for babies and the best protection against life-threatening illnesses. Breast-feeding binds mother and child, is costless, and naturally encourages birth spacing. It could prevent deaths of at least 1 million children per year. Unfortunately it is not commonly practiced in many developing countries because:

1. Hospitals and maternity clinics promote bottle-feeding, in part because of the aggressive marketing by infant formula manufacturers, who provide free or low-cost supplies. *for*
2. The common practice of separating babies from mothers at birth, which inhibits its breast feeding. *See*

### Initiation and maintenance of breast feeding:

The decision of breast feeding should be made during antenatal period by the help of the obstetrician and pediatrician. **Breast feeding guidelines may be helpful in this respect.** These include:

1. Begin breast feeding as soon as possible, preferably within the first half-hour after delivery. *1/2 hr*
2. Position the infant so that its mouth covers both nipple and areola, and latches on properly. *3 or 4 times*
3. Breast feeding should be on demand, whenever the infant is hungry, both day and night.
4. Exclusive breast feeding through the first 6 months of life.
5. Avoid use of bottles or pacifiers. *sterilization problems*
6. Appropriate complementary semi-solid food should be started after 6 months of age, but the breast should be offered first.
7. Breast-feeding should be continued throughout the second year of life. *2nd*

## 2. Application of screening tests

**Screening Tests:** These are tools to sort out apparently healthy pupils, into those who are free from a particular health problem and those who might have a specific health problem that needs further evaluation by specialists.

**Screening tests should include the following:**

- i. Measuring weight and height to assess pupils' growth.
- ii. Measuring visual acuity.
- iii. Measuring hearing acuity.
- iv. Detecting pupils with speech defects.
- v. IQ assessment.
- vi. Postural screening should be performed at least once for all preparatory school pupils. This is done to reveal body posture abnormalities
- vii. Mental health screening:

Two important assessment tests are conducted at schools:

- a. Assessment tests for depression in the first preparatory grade.
- b. Assessment tests for anxiety in the first secondary grade.

**Data obtained are added to the health record**



Certain chronic diseases are more frequent among the older people than in younger ones.

These are:

- **Cardiovascular diseases:** The end result of atherosclerotic process becomes most evident in the elderly age group. The incidence of IHD, stroke and hypertension is significantly increased in this age group. Similarly mortality due to these conditions also increases. Cardiovascular diseases are encountered in both sexes
- **Cancer:** The danger of cancer looms large past middle life. The incidence of cancer rises rapidly after the age of 40. Gastric, lung and colorectal cancers are more common in elderly age group (males and females). The incidence of Prostatic cancer among men shows a steep climb after 50 years age. Prostate Specific Antigen (PSA) could be a useful screening test for prostate cancer after 50 years of age. Three major cancers of genital tract affect the elderly women namely uterine (endometrial), ovarian and cervical cancers.
- **Accidents and injuries:** There is marked increase in risk of accidents and injuries among the aged. The major physiopathological factors which contribute to such increased proneness are diminution of vision and hearing, reduced muscular strength and neuro-muscular coordination, and various environmental factors, notably wet, slippery floors and poor lighting. The commonest areas of accidents are the toilet (due to wet floor, and a large number of fixtures in a small space), kitchen (mainly due to open flames), staircases and roads.
- **Diabetes:** About 75% of diabetics are over 50 years of age. The micro vascular as well as macro vascular complications of diabetes are more prominent during advanced age. It is a leading cause of death as the population grows old.
- **Diseases of locomotor system:** A wide range of articular and non-articular disorders affect the aged –Fibrositis-myositis-neuritis-gout-rheumatoid arthritis-osteoarthritis-spondylitis of spine,..., etc. These conditions cause more discomfort and disability than any other chronic disease in the elderly.
- **Respiratory illness :** Chronic bronchitis, asthma and emphysema are of major importance

UNIVERSITY OF ALEXANDRIA

FACULTY OF MEDICINE

Community Medicine Written Examination

مستوى  
الأساتذة  
ش. ش. ش.

Date: 28/ 8 /2010

Time allowed: 2 hours

All questions to be attempted

Part I

1. Explain why B. anthracis is considered one of the most likely biological warfare (BIOTERRORISM ) agents [3 marks]
2. State control measures applied to contacts of active case of pulmonary tuberculosis [5 marks]
3. Classify carriers of communicable diseases according to place, duration of carriage and spectrum, of infection with only one example for each
4. Mention characteristics of water borne epidemic [5 marks]
5. Enumerate the modes of transmission of Brucellosis [5 marks]
6. List measures of primary prevention of Diabetes Mellitus [6 marks]
7. Identify factors that contribute to resurgence of malaria in many Countries [5 marks]
8. A needle stick injury occurred for a health care worker where the patient's infected blood is accidentally injected under the health worker's skin. Draw the cycle of infection for related to this accident [6 marks]
9. Discuss briefly international measures applied to control of [5 marks] yellow fever in the infected zone



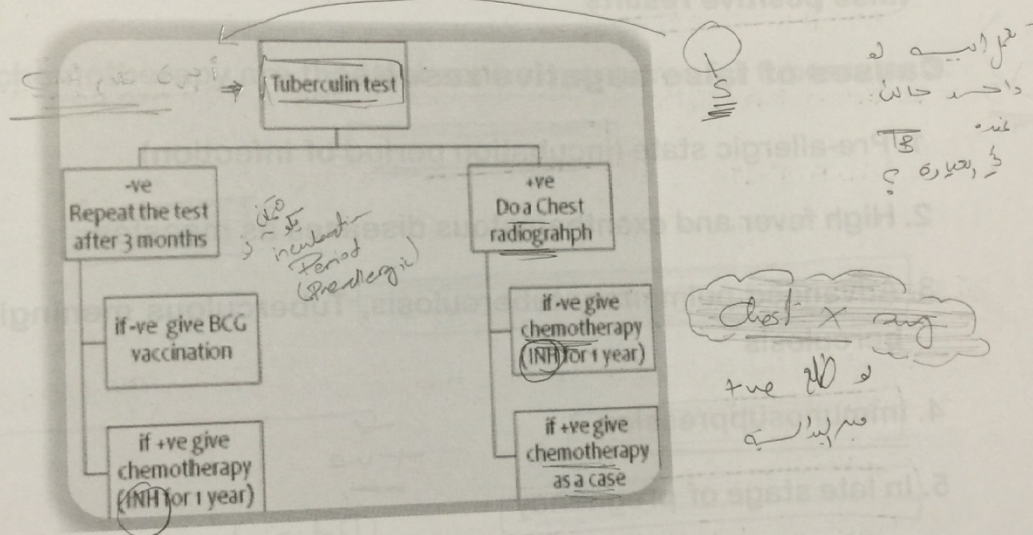
## 7. Measures for contacts

### A) Investigation

Enlistment and investigation of potential exposed contacts by tuberculin testing is recommended at the time of diagnosis.

Figure 3 demonstrates the algorithm that should be followed with contacts of patients with tuberculosis.

A **positive reaction to tuberculin test** is generally accepted as evidence of past or present infection with tuberculosis. The tuberculin test is the only means of estimating the prevalence of infection in a population.



**Figure 6 Steps in investigating a tuberculous case by tuberculin testing**

Positive tuberculin indicates sensitivity to tubercle bacilli resulting from previous BCG vaccination, old healed primary lesion or active disease.

A positive reaction is characterized by induration (not erythematic) due to cell infiltration, reaches maximal after 48-72 hours. The standard cut off point for positive tuberculin test is 10 mm area of induration.

A cut off point of 5 mm is considered positive in case:

- Chest radiographs consistent with active or old healed



- Clinical evidence of tuberculosis
- Contacts of smear positive pulmonary Tuberculous cases
- HIV infection

### Importance of tuberculin test:

- Identify tuberculin negative who are eligible for vaccination (However BCG could be administered to subjects whatever the tuberculin status).
- Evaluate effectiveness of BCG vaccine as BCG vaccination converts tuberculin negative persons to tuberculin positive.

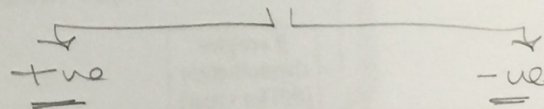
### Limitations of tuberculin testing

Tuberculin test is of little value as a diagnostic tool for case

finding of TB because a) it cannot be used to differentiate between natural infection and previous BCG vaccination and b) presence of false negative and false positive results

### Causes of false negative results

1. Pre-allergic state (incubation period of infection)
2. High fever and exanthematous diseases as measles
3. Advanced pulmonary tuberculosis, Tuberculous meningitis, and miliary tuberculosis
4. Immunosuppression
5. In late stage of pregnancy



### Causes of false positive results

1. Infection with atypical mycobacterium
2. Tuberculoid leprosy
3. Cutaneous leishmaniasis

① atypical  
② leprosy TB  
③ Cutaneous leishmaniasis

① IP  
② Measles  
③ Advanced  
④ ↓ immunity  
⑤ late pregnancy

### B) Health education

Contacts should be aware of the nature of the disease and the importance of the measures carried out towards them.

### c) BCG vaccination

It is given to tuberculin negative contacts of positive sputum as long as there are no contraindications. —————> immunocompromized + etc etc

3)

## Classification of carriers

### 1-According to place of carriage

- a. Upper respiratory carriers as in case of diphtheria, streptococcal and meningococcal infections.
- b. Fecal carriers as in case of typhoid, paratyphoid, cholera, and infectious hepatitis.
- c. Urinary carriers as in case of typhoid and paratyphoid.
- d. Skin carriers as in case of staphylococcal infection.

### 2. According to duration of carriage:

- a. Transient carrier: A person who harbors and excretes the infectious organisms up to weeks.
- b. Temporary carrier: A person who harbors and excretes infectious organisms up to 3 months (one year for enterica). Most of the carriers (about 95%) are of the temporary type.
- c. Chronic carrier: A person who harbors and excretes organisms for more than 3 months (more than one year for enterica) > 3 months.
- d. Permanent carrier: A person who harbors and excretes the infecting organisms for life (e.g. Salmonella typhi, hepatitis B virus and HIV). For life.

### 3. According to the spectrum of infection (Chronologically)

- a. Incubatory carrier: A person who harbors and excretes the organisms during the incubation period (e.g. hepatitis A, mumps and poliomyelitis).
- b. Convalescent carrier: A person who discharges the agent of disease during convalescent period (e.g. typhoid). Here there will be a need for carrying out 3 consecutive bacteriological examinations before release of the cases.
- c. Contact carrier: A person who is in contact with an infected person as doctors, nurses, family, members as well as servants. Contact carriers are of transient type, usually the period of carriage ends as soon as the patient is cured or the contact is over (e.g. cholera and typhoid).



## **Mode of Transmission:**

### **1. Contact transmission:**

Most commonly infection occurs by direct contact with infected animals or tissues, blood, placenta and aborted fetus.

### **2. Common vehicle:**

Infection may occur by ingestion of unpasteurized infected milk or milk products (soft cheese), also drinking water contaminated with excreta of infected animals could serve as a vehicle.

### **3. Airborne**

The environment of a cowshed may be heavily infected. Few people living in or working in this environment can escape inhalation of infected dust. Brucella may be inhaled in form of droplet nuclei in slaughter houses, meat processing plants and laboratories. These droplet nuclei may remain suspended in a sphere.

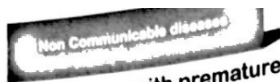
## 1. Primordial prevention

This is prevention of the emergence of risk factors in countries in which they have not yet appeared. This will include maintenance of normal body weight through the adoption of healthy nutritional habits and physical exercise.

## 2. Identification of those at risk:

Potential diabetics are those considered at high risk for the development of the disease they include:

- Individuals with positive family history in twins, parents and siblings.
- Those over 40 years of age.
- Obese individuals.
- Females with suggestive obstetric history as those delivering babies over 4.5 Kg. Also females with excess weight gain during pregnancy.



- Cases with premature atherosclerosis.

## 3. Health education:

Health education should be directed towards the public with special emphasis on high risk groups. Health education messages should include:

- 1- Control body weight by balancing food intake with energy consumption.
- 2- Promotion of physical exercise. Working your muscles more often and making them work harder improves their ability to use insulin and absorb glucose e.g. walking briskly for a half hour every day.

**4. Diet modification:** Four dietary changes can have a big impact on the risk of type 2 diabetes. The dietary messages include:

- **Choose whole grains and whole grain products over highly processed carbohydrates.**
- **Skip the sugary drinks, and choose water, coffee, or tea instead.**
- **Choose good fats** (as the polyunsaturated fats found in liquid vegetable oil, nuts, and seeds) **instead of bad fats** (margarines, packaged baked goods, fried foods in most fast-food restaurants, and any product that lists "partially hydrogenated vegetable oil" on the label).
- **Limit red meat and avoid processed meat; choose nuts, whole grains, poultry, or fish instead.**

**5- Avoidance of diabetogenic drugs** by prone individuals like contraceptive pills, corticosteroids.

## **RESURGENCE OF MALARIA:**

At the beginning, malaria eradication programs were highly successful but, in many countries, the resurgence had grown to an epidemic form. The resurgence of malaria is attributed to the followings:

Shortage of insecticides

b- Development of insecticides resistant vectors.

c- Shortage of trained field workers

d- Shortage of anti-malaria drugs

e- Development of parasites resistant to anti-malaria drugs.

f- Defects malaria control program:

g - Premature take off into consolidation maintenance phase.

h- Inadequate case detection.



## Cycle of infection:

### Agent

1 serotype

⇒ Autoclaving = sterilization is needed

Hepatitis B virus (HBV.) is highly resistant. It can live in dry environment at least for seven days. It could be inactivated by sodium hypochlorite 0.5% and autoclaving for 30 minutes.

bleach

environment

### Reservoir

Man is the only reservoir of infection in the form of cases (clinical and subclinical) and carriers (chronic).

### Source of infection

Typhoid  
HBV  
Chronic  
carrier

- ① - Human blood and blood products may transmit infection if not screened for HBs Ag.
- ② - Low concentration of the virus is found in body fluids such as saliva, semen, vaginal secretion and breast milk.
- ③ - Contaminated needles, syringes and other intravenous equipment.

No documented evidence about transmission through tears, sweat, urine, stool or droplet.

### Exit

infectious  
load

The organisms will leave the body in all body secretions and excretions. However, only the following have been to be infectious: blood, serum, saliva, semen, vaginal fluids and breast milk. Rarely the virus passes from maternal blood to fetal circulation (Transplacental).

### Mode of transmission

#### 1. Direct contact

-Sexual contact (heterosexual or homosexual),

Peni neta  
→ before delivery  
→ during delivery  
→ after delivery (breast)

**2. Transplacental transmission is rare but exposure occurs mostly during birth** when the mothers are HBs Ag positive due to leak of maternal blood to baby's circulation.

**3. Per-cutaneous (IV, IM, subcutaneous or intra-dermal) injections, tattooing, ear piercing and needle stick.)**

**4. Contamination of skin lesions** (fresh cutaneous scratch, abrasion and burns)

**5. Infected blood and blood products** through transfusion or dialysis.

### Incubation period:

It ranges from 45- 180 days with an average of 120 days

X4

10

HBV  
HBs Ag  
HBe Ag  
HBe Ab  
HBc Ab



*Tropical Africa / South America*

### **A- Infected (endemic) zone:**

*(2nd zone) - virus vector outside environment*

The objective of the control measures is to prevent exportation of the disease and diminish local spread through the following measures:

#### **1. Ports and airports:**

Should be away from the city and apply insecticides periodically to control mosquito and application of insecticides on planes before leaving.

#### **2. Individuals:**

Those working in the airport and travelers to outside or entering should have valid vaccination certificate. This validity means that the person is vaccinated since not less than 10 days and not more than 10 years.

Cases of yellow fever should not leave the country.



Mention limitations of Mass media [4 marks]

2. List the elements of the primary health care centers [6 marks]

3. State six objectives of the Expanded Program on immunization (6 marks)

4. Compare in a table between features of pyramids of developed and developing countries [8 marks]

5. Give reasons why school pupils are more liable to communicable diseases [4 marks]

6. identify five components of postnatal care [5 marks]

7. List six of the duties of the industrial physician [6 marks]

8. Define the term life skill education, and give only the name of five core set of skills that are the initiative for promotion of health & well-being mainly for children and adolescents



2)

### **Elements of primary health care:**

⇒ Principles  
⇒ elements

1. **Health education** regarding prevailing health problems and their prevention and control measures.
2. Provision of adequate **environmental** sanitation.
3. Promotion of **food** supply and proper nutrition.
4. **Immunization** of children.
5. Provision of comprehensive **maternal and child health** care and family planning services.
6. Prevention and control of **endemic diseases**.
7. Appropriate management of **common diseases and injuries**.
8. **Provision of adequate drugs.**

# 3)

## Objectives of EPI.

Extinction (no disease) → Small Pox & (lab 3:2000)  
 1. To achieve and maintain almost 100% coverage with all EPI vaccines.

Eradication (Polio) → 2. To achieve global **eradication** of polio and then maintain polio free status.

Elimination (measles + neonatal tetanus) → 3. To **eliminate** measles by immunization of targets with two doses of measles vaccine. (national campaign)

4. To **control** hepatitis B infection by reducing sero-prevalence of HB surface antigen (HBsAg) to less than 1% among children under five years old.

5. To **eliminate** neonatal tetanus.

6. To maintain zero level of diphtheria. (↓ incidence)

7. To prevent severe forms of TB such as TB meningitis and miliary TB.

8. To reduce the incidence of whooping cough, mumps, rubella and Hib infection.

9. To maintain immunization safety.

10. To prepare for introduction of new vaccines, according to disease burden and cost effectiveness of the vaccine.

BCG / live attenuated.  
MMR  
OPV

# 4)

# کرر

5) -----

School pupils are more liable to communicable diseases due to the following reasons:

- 1. They are vulnerable group and have low immunity level
- 2. They are gathered in schools from different localities and with different health problems.
- 3. They might adopt unsound health practices (e.g. uncovered sneezing or coughing, sharing head caps or eating utensils or might have dirty hands).
- 4. Overcrowding at school and in classrooms contributes to transmission of respiratory diseases.

6) ----- عایز عناوین -----  
زء ده کله

7) ----- کور -----



UNIVERSITY OF ALEXANDRIA  
FACULTY OF MEDICINE  
FOURTH YEAR EXAM  
COMMUNITY MEDICINE  
Short essay Questions

⑫ الشروق ميديكال  
ش. شاميليون  
Date: 28 June 2011  
hours

Time allowed: tow

Total marks: 90

All questions to be answered

PART I

I- Give the reason for the following:

- 1) Variations in diseases frequency between sexes.
- 2) Isolation of patients in many infections diseases are of limited value.
- 3) Some characteristics of measles transmission make the disease more resistant to eradication.

II- List of following:

- 4) Ways of air-born transmission with examples.
- 5) Types of health care waste treatment. Describe the appropriate method used for treatment of sharps, chemicals and pharmaceutical.
- 6) The advantages of directly observed treatment short course chemotherapy in Tuberculosis.
- 7) Three health education messages to be given to high risk groups about diabetes Mellitus.
- 8) Three examples of standard precautions for infection control.
- 9) Types and modes of administration of influenza vaccines.
- 10) In countries undertaking polio eradication, a single case of poliomyelitis is considered public health emergency. State the epidemic measures applied during poliomyelitis epidemic.

2)

In some diseases organisms are excreted during the incubation period

- Diseases are highly communicable during the early stage.
- The exact period of communicability is not known.
- Carriers may go undetected.
- Many mild cases of infection spread disease without being detected.

3)

On the other hand, some characteristics of measles transmission make the disease more resistant to eradication. These are:

1. Measles has very high secondary attack rate; (i.e. highly communicable). The infectivity of measles is very high that in a relatively confined area, a single exposure may be enough to infect all susceptible. It seems necessary to attain and maintain nearly universal (100%) coverage with vaccine in order to provide a barrier to transmission.
2. Measles is transmitted mainly by direct contact with infectious droplets or less commonly by air borne spread (without face to face contact with a case). Air borne transmission of measles effectively increases the contact rate between the index case and susceptible. This reinforces the need for achievement of maximal coverage.
3. Because patients are contagious four days before rash onset it is often difficult to identify them, as many of whom may still exhibit nonspecific symptoms. This limits the effectiveness of isolation and containment activities.

Based on a combination of measles immunization and surveillance strategies worldwide countries



4)

## D) Air-borne transmission:

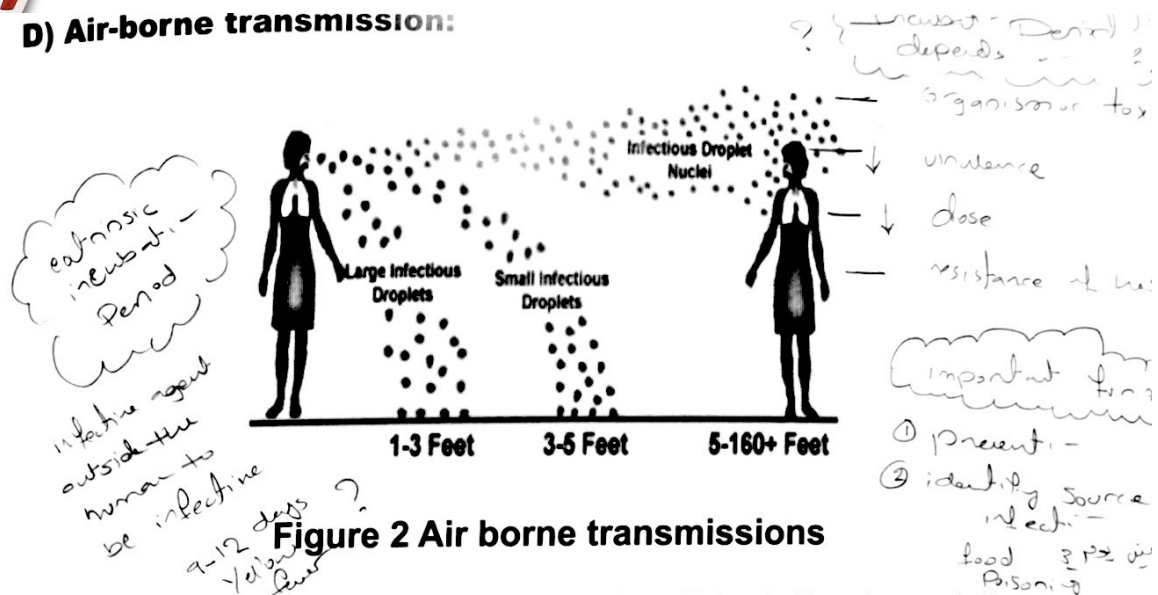


Figure 2 Air borne transmissions

This involves the dissemination of suspended particles in the air consisting partially or wholly of microorganisms. They remain suspended for a long period of time (the reservoir and the host may not be in the same room). Some organisms retain their infectivity (as TB and hemolytic streptococci) and the others do not.

Air-borne transmission can be:

### 1- Droplet nuclei:

These are small particles (1-10 microns range) that result from evaporation of the fluids from the droplets of infected person. They contain pathogens and remain suspended in air for a long period of time. Particles in the 1-5 micron range are liable to be easily drawn into the alveoli of the lungs and remain there. When they are inhaled by a susceptible host they cause infection. Diseases that spread by droplet nuclei include tuberculosis, influenza, chicken pox, measles, Q fever and many respiratory infections.

### 2-Dust nuclei:

This mode of transmission is most common in hospital-acquired infection (Nosocomial infection). The large particles by their sheer weight fall on the floor, carpets, furniture, clothes, bedding, linen etc. and become part of dust. Some of the organisms resist drying for a long time and may survive in the dust (e.g. tubercle bacilli may survive in the dust for considerable periods under optimum condition of temperature and moisture). Diseases transmitted by dust include streptococcal and staphylococcal infection, tuberculosis, Q fever and psittacosis. Airborne dust nuclei are primarily inhaled, but may settle on uncovered food and milk.



6)

### **Advantages of DOTS:**

- ① ○ Rapid cure i.e. elimination of both rapid and slow multipliers from the patient's body.
- ② ○ Low failure rate.
- ③ ○ Reduction of emerging drug resistant strains
- ④ ○ Improved patient's compliance.

**The only disadvantage of DOTS is the high cost.**

# 7) -----

## 3. Health education:

Health education should be directed towards the public with special emphasis on high risk groups. Health education messages should include:

- 1- Control body weight by balancing food intake with energy consumption.
- 2- Promotion of physical exercise .Working your muscles more often and making them work harder improves their ability to use insulin and absorb glucose e.g. walking briskly for a half hour every day.

# 9) -----

Criteria	Inactivated vaccine	Live attenuated intranasal influenza vaccine
Type	Inactivated trivalent strains including 2 subtypes of A virus ( $H_3N_2$ & $H_1N_1$ ) one B strain virus.	Live attenuated trivalent vaccine (2 subtypes of A virus and one type B virus). Heat sensitive, requires adequate cold chain.
Dose and mode of administration	<p>-0.5 ml IM injection.</p> <p>For adult: single dose annually in deltoid region.</p> <p>For children: Two doses separated by 4 weeks in the anterior lateral aspect of the thigh.</p>	<p>0.5 ml given by intranasal spraying. Virus replicates in nasopharynx and stimulate the production of local &amp; systemic immunity.</p> <p>*It could be given before the peak of influenza (October, November).</p> <p>*It could be given with any other live vaccine as MMR</p>

### Epidemic measures:

In countries undertaking polio eradication, a single case of poliomyelitis is considered a public health emergency prompting immediate investigation and planning for a large scale.

At the time of case investigation, public health authorities will determine the need for supplemental immunization programs in the community.

#### **Measures applied during epidemics include:**

- 1- Disease notification, collection of information (clinical and epidemiological including vaccine history and contact with OPV vaccine) of any suspected cases of paralytic polio. Collection of appropriate specimens for viral isolation and serology.
- 2- Mass vaccination should be carried out but not needed if the disease is confirmed to be vaccine associated.
- 3- Postpone elective nose and throat surgery; avoid IM injections including immunizations (IPV) until after epidemic.
- 4- Start control measures immediately while waiting for laboratory confirmation of case.
- 5- Identify the route of introduction of poliovirus into the community.
- 6- Active surveillance for AFP cases should continue for at least two incubation periods beyond the onset of the last case in an area.



List the following:

- 1) The ways in which the community can participate in primary health care.
- 2) Importance of demographic data in public health.
- 3) advantages of food balance sheet.
- 4) Three examples of biological risk in pregnancies.
- 5) Five guidelines for safe supplementary feeding during infancy.
- 6) Purposes of school health appraisal.
- 7) Measures for Primary prevention of childhood disabilities.
- 8) Three kinds of relationships between mental and physical symptoms and illnesses.
- 9) Objectives of preplacement examination.
- 10) Three different forms of screening tests recommended for elderly people.

#### 4. Community participation:

The concept of primary health care emphasizes the need of health care not only for people but also by people. There are many ways in which the community can participate in health care.

**Examples** ① Defining Problems & Priorities ② Participate - Planning, evaluation, supervision, financial

a) They can be involved in defining community health problems and setting up priorities. They can also participate in preparing plans of action with health personnel to solve those problems as well as in supervision and evaluation.

b) They can participate through financial support to cover the cost of some activities of PHC (equipment, drugs, audiovisual aids, furniture, etc).

c) Adopting healthful behaviors such as breast feeding, adequate nutrition, proper

food storage, stop smoking, personal hygiene, physical exercise and prohibiting alcohol and drugs. Through adopting healthful behaviors, people can participate in the prevention of malnutrition, hepatitis, enterica and malaria.

d) Proper utilization of health services especially maternity care (antenatal, natal, postnatal and family planning), child care (immunization, growth monitoring, using 'ORT' at homes), reporting of births and deaths, etc.

2)

## Importance of demographic data

Demographic data are needed in public health because :

- 1- Health status of a community depends on the dynamic relationship between number of people, their characteristics and the space they occupy.
- 2- Planning of health services can be logically guided by demographic variables. For example: How many health units do we need? How to distribute them in the community in order to be accessible to the target population? What type of manpower is needed?
- 3- They are needed for computing morbidity, mortality and fertility rates.



4)

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5)

کرر



### A. **Appraisal activities**

These are organized activities, carried out to assess physical, mental, emotional and social status of school pupils.

Purpose of school health appraisal:

1. To have a clear idea about the overall health status of pupils. Any discovered health problems could be treated or referred to a specialist.
2. To detect pupils who need special care because of their health status.
3. To educate pupils, parents and teachers about healthful behavior.
4. To provide an idea about effect of education on health and vice versa.
5. To provide a baseline data for further follow up of pupils' health status.
6. To use data obtained from appraisal for planning of school health services.

## The Relation between mental and physical symptoms and illnesses

### **1. A mental disorder may provoke or release physical disease:**

Mental disorders can precede the onset of physical disease in some patients; e.g. frustrating life events can be followed by symptoms of tension and irritability, and then by the onset of organic disease. Also, depression may put men at greater risk of developing cancer. Moreover, migraine may be released by a depressive illness.

### **2. Mental symptoms may be the presenting symptoms of a physical disease:**

Several diseases can be presented with mental symptoms, for example myxoedema and pernicious anemia.

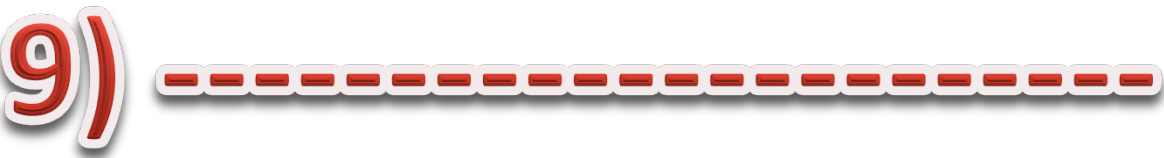
### **3. Mental illness may be a direct consequence of physical disease**

This is encountered as in the depressive illness that follows the diagnosis of cancer. This may be related, to chronic pain, to the patient's sense of hopelessness or to severe physical disability.

### **4. Mental illness may exacerbate the pain of a physical disease:**

Depressed patients experience pain and discomfort more intensely, even if they are physically well.

### **5. Mental illness may present to doctors with physical symptoms that have no organic basis:**



1. Objectives of pre-placement examination:

**Objectives of pre-placement examination:**

Proper job placement of workers clearly results in better performance, less absenteeism, lower accident rates, less chance of aggravating existing diseases and probably a longer production working life. This aim could be achieved through:

- ← Proper placement of workers according to their medical and physical abilities to perform their job efficiently.
- ← Put a base-line of the health status of the workers at the start of work to be used in compensation claims.

To achieve these objectives, health assessment of workers should be performed:



14

Alexandria University  
Faculty of Medicine  
Fourth year  
Community Medicine  
Short Essay Questions

الشروق ميديكال  
الانزايطة  
ش شامبليون

Time allowed: two hours  
All questions to be answered

Date: 15/9/2011  
Total Marks: 90

Part I

I- Give the reasons for the following:

- 1) Variations in disease frequency among different age groups
- 2) Re-emergence of tuberculosis as a major health problem worldwide
- 3) Carriers are dangerous

II- List the following:

- 4) Mechanisms of vector transmission of diseases
- 5) Prevention and control of air pollution
- 6) Food borne zoonotic diseases
- 7) Five modifiable risk factors for coronary heart disease
- 8) The strategies recommended for achieving measles elimination and mortality reduction
- 9) The international measures applied in infectable zone to prevent infection with yellow fever
- 10) Five examples of high risk groups for viral hepatitis B infection

# 2)

Nowadays, tuberculosis is re-emerging as a major public health problem worldwide for the following reasons:

## 1. TB Control program

- The program is neglected by governments, leading to its spread all over the world
- Its poor management contributed to increase in emerging drug resistant strains which increases the disease burden
- Difficulty and high expenses of treating multi-drug resistant cases are one of the contributing factors.

## 2. Demographic reasons

- The rapid population growth and its sequences such as malnutrition, housing problems (overcrowding and bad ventilation), and lack of health care facilities has contributed to the increase in the number of tuberculous cases.
- Increase in life expectancy of the population which led to increasing opportunity for the conversion of a latent infection into clinically evident case.

## 3. Emerging diseases

The emerging problem of HIV/AIDS and its link with tuberculosis led to explosion of tuberculous cases in HIV/AIDS endemic areas. HIV infection destroys the immune system and activates tuberculosis in individuals who are infected with tuberculosis.

- ① Neglected by government
- ② Difficult + expensive treatment
- ③ Over population
- ④ ↑ life expectancy
- ⑤ HIV

↓ immunity ↑ activation of TB



# 3)



## **Carriers are dangerous because:**

- 1. They do not show any clinical manifestation.
- 2. The carrier and his contacts are not aware of their condition.
3. There is no limit for their movement because they are not disabled by the disease
4. It is difficult to discover them.
5. It is not always possible to deal with them.
6. The long duration of carriage in some communicable diseases helps in spreading disease (Typhoid, HIV).
7. The high prevalence of carrier state among the population will help in dissemination of infection.



### C) Vector transmission:

Various insects are known to be vectors for disease transmission. Their role is either mechanical or biological.

#### 1- Mechanical transmission:

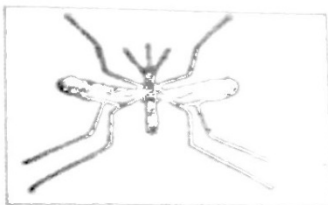
It can be direct or indirect.

a) **Direct:** If the insect carries pathogenic organisms from infected person and transmits it to a healthy one (e.g. purulent conjunctivitis).

b) **Indirect:** This occurs when an insect carrying pathogenic organisms and then settles them on human food or drink. So, these organisms will contaminate the food and drink (e.g. typhoid, dysentery and cholera).

#### 2-Biological transmission:

In this case the agents have to pass through some biological activity inside the vector which requires a certain period of time "extrinsic incubation period".



Adult mosquito



Flea

1- **Propagative biological transmission:** In this type of transmission simple multiplications of the causative organisms in the vector occur. (e.g. plague bacilli in rat fleas) *Yersinia Pestis*

2- **Cyclo-propagative:** here the agents change in form and number (e.g. malaria parasites in mosquito). *Anopheles mosquito*

3- **Cyclo-developmental:** here the agents of disease only have a cycle of developmental changes inside the vector but they do not multiply (e.g. microfilaria in mosquito). *Wuchereria bancrofti*

## A- Factors related to life style

### 1- Tobacco use:

Greatest risk is associated with early initiation (< 16 years); passive smoking is an additional risk. Cessation of smoking reduces the risk of coronary heart by 50-70%.

The possible mechanisms include:

- Nicotine increases adrenergic stimulation which raises blood pressure, heart rate, artery spasm and increases oxygen demand of the heart muscles.
- Increased carbon monoxide damages the endothelium lining and induces atherosclerotic plaques.
- Decreased serum level of high density lipoproteins (HDL) and increases low density lipoproteins (LDL)

### 2- Physical inactivity:

It is a greater risk of cardiovascular diseases and its other risk factors (glucose metabolism, diabetes mellitus, blood coagulation, obesity, high blood pressure, worsening lipid profile). Sixty percent of global population is engaged in a sedentary life style associated with modernization, urbanization, and mechanized transportation.

### **3- Unhealthy diet:**

The risk of cardiovascular diseases increases with refined sugar, low fruit, vegetable and fiber content as well as high saturated fat intake.

## **B- Medical conditions**

### **1- Diabetes mellitus:**

It damages both peripheral and coronary blood vessel. The risk of coronary heart disease is 2-3 times higher in diabetics than non-diabetics. This is due to higher rates of atherosclerosis.

### **2- Hypertension:**

Hypertension ( $>140/90$  mmHg) is a very important risk factor as it is widespread and relatively easy to control. Hypertension accelerates the atherosclerosis especially if hyperlipidaemia is present as well.

### **3- Serum cholesterol:**

Serum cholesterol level is an important risk factor for the incidence of coronary heart disease especially for levels  $>240$  mg/dl. Low density lipoprotein (LDL) cholesterol is the most directly related to CHD. High density lipoprotein (HDL) is a protective factor. Estrogen tends to raise HDL-cholesterol and lower LDL-cholesterol, protection for women in reproductive age.

### **6- Obesity (Body Mass Index $> 30$ ):**

It is a modern worldwide epidemic that elevates the risk of both cardiovascular diseases and diabetes mellitus.

## **C- Other risk factors**

### **1-Type A personality:**

Those with tense type A personalities are more prone to cardiovascular disease. Type A behavior-characterized by restlessness, hostility, impatience, urgency is associated with increased risk of CVD than the calm (type B behavior).

### **2- Social class:**

In developed countries, cardiovascular diseases are more encountered among educated and lower socioeconomic groups due to accumulation of risk factors.



8)

Egypt have joined the program of measles elimination in the Eastern Mediterranean region by the year 2010 under the supervision of WHO through the activities of expanded program of immunization.

The strategies recommended for achieving measles elimination and mortality reduction include:

1. Maintain high vaccination coverage rate for measles vaccine in both first and second doses of the vaccine. Eradication of measles requires achieving an immunization coverage of at least 96% of children under one year of age.
2. Enhancing measles surveillance systems.
3. Improve management of complicated cases of measles.
4. Provide Vitamin A supplementation through immunization services.

9)

### **B-Infectable (Receptive) zone**

The following must be done to prevent the disease entry:

#### **1. Ports and airports**

All planes and ships coming from infected areas should be disinfected.

#### **2. Individuals:**

-Travelers carrying valid vaccination certificates are allowed to enter and if not or if they were vaccinated since less than ten days they should be put in quarantine to complete the six days.

-Yellow fever patients must be isolated under mosquito net for five days.

#### **3. Monkeys and apes:**

Monkeys and apes should be kept in quarantine for seven days.

#### **3-International travel:**

A valid international certificate of immunization against yellow fever is required by many countries for entry of travelers coming from or going to recognized yellow fever zones of Africa or South America otherwise, quarantine measures are applicable for up to six days.

# 10)

## High risk groups

Certain groups carry higher risks as

1- Health care workers especially those performing invasive medical procedures as dentists, surgeons.

2- Laboratory technicians working in blood banks.

3- Recipients of blood transfusion and its products in countries using unscreened blood.

4- Haemodialysis patients.

5- Recipients of solid organ transplant

6- Households contacts and sex partners of HBV infected persons.

7- Infants of HBV carrier mothers

8- Prisoners. (mostly intravenous)

9- Injection drug abusers

10- Prostitutes

11- Heterosexuals with multiple partners and homosexuals.

Hepatitis B

1) Pre-icteric phase

# vague symptoms and signs

- Fever
- Anorexia
- N/V
- RA after abdominal pain

2) Icteric phase

start

② Core Ab  
only in liver  
not in blood  
IgM recent  
IgG past

③ HBc Ag  
+ve = high viral load + rapid

Favism  
Haemoglobinuria  
Zinc

Fourth Year Final Exam (Essay Questions)

Date: 23/6/2012

Time allowed: two hours

All questions to be answered

Part I

1. State the epidemic measures of cholera. (4 marks)
2. Mention the preventive measures of brucellosis. (4 marks)
3. Discuss briefly the international measures of plague. (5 marks)
4. Differentiate in a table between the influenza vaccines as regard: type, mode of administration and indications. (4 marks)
5. Enlist modes of transmission of AIDS. (4 marks)
6. State the primary preventive measures of coronary heart diseases. (4 marks)
7. Mention measures applied for contacts of a case of German measles. (4 marks)
8. Describe the general characteristics peculiar to place distribution of a disease. (4 marks)
9. Define the antigenic power of the organism and mention its measures. (4 marks)
10. Enlist the duties of hospital epidemiologist in control of nosocomial infection. (4 marks)
11. State the impact of polluted water on health. (4 marks)





### **1. Eradicating the disease from domestic livestock:**

This is cost beneficial to a country's economy in the long term because of increased livestock productivity. Eradication efforts include:

- Search for infected animals by serologic testing and by milk ring test.
- Segregate and slaughter infected animals from the herd.
- Vaccinate animals. Successful vaccines are available for cattle, sheep, and goats but not yet for swine.
- Hygienic measures that comprise provision of a clean sanitary environment for animals, sanitary disposal of urine and feces, veterinary care of animals.

### **2. Pasteurization of milk:**

Milk products should only be manufactured from pasteurized safe milk. This simultaneously controls other milk borne diseases, such as salmonellosis and tuberculosis.

### **3. Health education:**

Educate the public not to drink untreated milk or milk products made from unpasteurized milk.

### **4. Education of occupationally exposed personnel**

# 3)



## International measures:

1. Report to WHO and to adjacent countries of the first case of plague appears in area previously was free from the disease
2. Air and seaports and ships should be rat proof and rodenticides and insecticides should be periodically applied. Measures applicable to ships, aircraft, and land transport arriving from cholera endemic areas are to be applied within the framework of the revised International Health Regulations.
3. International travelers those that arrived from an area with (i) epidemic of pneumonic plague and suspected of significant exposure should be isolated for six days (International Incubation period) and (ii) epidemic bubonic should be disinfected and kept under surveillance for six days from the date of arrival

**Table 1 Influenza Vaccines main features**

<b>Criteria</b>	<b>Inactivated vaccine</b>	<b>Live attenuated intranasal influenza vaccine</b>
<b>Type</b>	Inactivated trivalent strains including 2 subtypes of A virus ( $H_3N_2$ & $H_1N_1$ ) one B strain virus.	Live attenuated trivalent vaccine (2 subtypes of A virus and one type B virus). Heat sensitive, requires adequate cold chain.
<b>Dose and mode of administration</b>	<p>-0.5 ml IM injection.</p> <p>For adult: single dose annually in deltoid region.</p> <p>For children: Two doses separated by 4 weeks in the anterior lateral aspect of the thigh.</p>	<p>0.5 ml given by intranasal spraying. Virus replicates in nasopharynx and stimulates the production of local &amp; systemic immunity.</p> <p>*It could be given before the peak of influenza (October, November).</p> <p>*It could be given with any other live vaccine as MMR</p>
<b>Effectiveness</b>	Between 70-90% and immunity declines after one year of vaccination. Annual revaccination	
<b>Side effects:</b>	Since the vaccine is prepared in eggs, hypersensitivity may develop. Fever and local inflammation at the site of injection and rarely Guillian-Barre.	



## Mode of Transmission

1. Direct contact transmission through unprotected sexual intercourse
2. Contact transmission from mother to child (trans placental during pregnancy, at the time of birth or after birth through breast-feeding)
3. Indirect contact transmission through the use of syringes, needles etc. soiled with blood.



Unprotected sexual  
intercourse with  
an infected partner



Vertical transmission  
(from mother to child)

- in utero
- during delivery
- breastmilk



Injection drug use  
(rare: infected  
blood/blood products)

6)

## **1. Avoid the emergence and establishment of factors that contribute to an elevated risk:**

*before 18*  
primordial  
Primordial prevention is defined as prevention of the development of risk factors before they happen in the community. It is known that cardiovascular diseases occur in a large scale only if the basic underlying causes are present. Successful implementation of primordial prevention in the context of cardiovascular diseases and other chronic diseases requires that healthy behaviors become normative, e.g. non-smoking society, attainment of ideal body weight, healthy diet and physical activity by the community members.

## **2. Support Tobacco free initiatives (TFI):**

The tobacco free initiatives are one of the World Health Organization's major public policy initiatives, commenced in May 1998 to reduce smoking and the harmful effects of the use of tobacco products on human health.

## **3. Health education**

This is required to change life styles behaviors associated with cardiovascular diseases. Health education messages should include:

### **a) Dietary messages** should include:

- Eat balanced diet.
- Eat daily fresh fruits and vegetables.
- Reduce the intake of saturated fats

**b) Smoking:** messages should stress avoidance or stopping of this behavior.

**c) Physical activities:** messages should stress the importance of having regular physical activity as part of normal daily life since childhood.

**d) Other diseases:** health education messages should stress the importance of screening, and compliance to treatment prescribed for health conditions re-

lated to cardiovascular diseases.

#### 4. Apply the high risk approach

This includes

- a. **Identify high risk group**
- b. **Proper management of the risk factor**

This may include

##### (i) **Proper management of hypertension**

The goal of the program is to reduce the mean population blood pressure levels, where 2 to 3 mmHg decrease would produce a large reduction in the incidence of cardiovascular complications. This may be achieved through decreased salt intake, decreased alcohol consumption, regular physical activity and weight control.

##### (ii) **Monitor serum cholesterol**

It is important to monitor the level of cholesterol, and lipoprotein levels

(LDL and HDL) in the blood. A total **cholesterol/HDL ratio** of less than 3.5 has been recommended as a clinical goal for cardiovascular prevention.

##### (iii) **Health education**

This is needed to change lifestyle behavior and reduce weight. In case of smoking the person should be helped to break the smoking habit permanently- nicotine chewing gum can be tried to wean them from smoking.



# 7)



#### **4. Investigation of contacts and source of infection:**

##### **A) Pregnant contact:**

- Identify pregnant contacts particularly those in the first trimester and put under surveillance for the incubation period.
- Laboratory investigation. If she has IgM or a rising IgG, it is an indicator of recent infection. They are either given immunoglobulin or abortion is done.

##### **B) Children contacts:**

Put them under surveillance.

No active or passive immunization is indicated.

# 10)



#### **B-Hospital epidemiologist:**

The main duties of hospital epidemiologist are:

1. Supervises the IC practitioners
2. Provides liaison with other members of medical staff.
3. Provides advice about surveillance.
4. Conducting epidemiologic studies required investigating outbreaks of HAI.
5. Development of infection control measures.

## Part II

11

1. Mention the diagnostic criteria of an occupational disease. (4 marks)
2. Enumerate the screening tests that should be done for school children. (4 marks)
3. Describe the pattern of Egyptian diet. (4 marks)
4. Define maternal mortality and mention its causes. (5 marks)
5. Mention the criteria of healthy villages. (4 marks)
6. Enlist the temporary contraindications of vaccinations. (4 marks)
7. Enumerate the essential steps of community health education. (4 marks)
8. State why demographic data are needed in public health? (4 marks)
9. State items to be covered during counseling on contraceptives in family planning clinics. (4 marks)
10. Enumerate individual factors that affect communication process. (4 marks)
11. State why under-five children need special health care program? (4 marks)

GOOD LUCK



# 1) -----

## Diagnostic criteria of an occupational disease:

- a- History: an occupational *work history* history of exposure to a hazardous agent or process.
- b- Physical examination: *clinical signs & symptoms* symptoms & signs of disease must coincide with the documented manifestations of the occupational disease.
- c- There is improvement of manifestations away from work and aggravation on getting back to work.
- d- Workplace environment: samples and measurements taken from the work place environment should indicate that the causative agent is present in a sufficient concentration to produce the disease.
- e- Surveying: reveals that workers under the same work condition may have similar manifestations, and an occupational disease is relevant to specific exposure in work sitting in a given body of workers than in the general population, or in other working populations. *other workers are affected also*

# 2) -----

screening by specialists.

## Screening tests should include the following:

- i. Measuring weight and height to assess pupils' growth.
- ii. Measuring visual acuity.
- iii. Measuring hearing acuity.
- iv. Detecting pupils with speech defects.
- v. IQ assessment.
- vi. Postural screening should be performed at least once for all preparatory school pupils. This is done to reveal body posture abnormalities
- vii. Mental health screening:

Two important assessment tests are conducted at schools:

- a. Assessment tests for depression in the first preparatory grade.
- b. Assessment tests for anxiety in the first secondary grade.

**Data obtained are added to the health record**



## 1. Maternal mortality ratio and rate

**Maternal mortality ratio** is the number of maternal deaths per 100,000 live births.

**Maternal mortality rate** is the number of maternal deaths per 100,000 women aged 15-49 years.

A **maternal death** is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management. It **does not include deaths from accidental or incidental causes.**

Almost 99% of these deaths occur in developing countries, where 60% of all maternal deaths after delivery, 24% during pregnancy and 16% during delivery.

### Causes of maternal death:

#### A) Direct obstetric causes

1- Hemorrhage (antepartum and post partum)

2- Eclampsia

3- Puerperal sepsis.

4- Obstructed labor.

5- Induced abortion.

#### B) Indirect obstetric causes:

Death resulting from previously existing diseases that are aggravated by pregnancy e.g. heart disease, anemia, chronic hypertension and diabetes.

In Egypt in 2007 direct causes were responsible for 69.5% of deaths and indirect causes for 30.5%. Hemorrhage ranked the first direct cause of death, (responsible for 38.5% of all deaths) and high blood pressure disease ranked the second (16.7%). Heart and artery diseases ranked the first indirect cause According to

the Ministry of Health, maternal mortality was 174 deaths for 100,000 live births in 1992, and had a steady decline from 84 deaths for 100,000 live births in 2000 to 59 deaths/ 100,000 live births in 2006. In the year 2015 it is projected to be 21.3 deaths for every 100,000 live births. This dramatic decline was due to a) Improvement of the quality of obstetric care, b) increasing access to family planning and motivating women to seeking medical care as early as possible.

5)



## What are these criteria?

1. Availability of adequate basic environmental services (water supply, sewage and refuse disposal)
2. Accessibility of health care (geographically, socially and functionally) for all rural population.
3. High level of health awareness of the population regarding their health problems and factors behind them.
4. Satisfaction of basic needs of the population as employment, food supply, education, recreation, etc.

6)



## II- Temporary contraindications to vaccinations (precautions)

These include the following:

- 1- Pregnancy: In Egypt, the only vaccine that could be given during pregnancy is tetanus toxoid. *only (inactivated syru) d. sure 2 types* *other countries ?* *injected vaccine X never in pregnancy*
- 2- Severe illness that needs hospitalization. *what about killed ?*
- 3- Immunosuppression: Live attenuated vaccines should not be given during immunosuppression. *leukemia* *IP for measles 7 days*
- 4- Recent blood transfusion as it contains antibodies that neutralize the vaccine antigens. It is better to postpone live attenuated vaccines for 1-3 months after receipt of blood transfusion. *Abs are not in blood* *turn our (de) not* *inactivated*

# 8)

## Importance of demographic data

Demographic data are needed in public health because :

- 1- Health status of a community depends on the dynamic relationship between number of people, their characteristics and the space they occupy.
- 2- Planning of health services can be logically guided by demographic variables. For example: How many health units do we need? How to distribute them in the community in order to be accessible to the target population? What type of manpower is needed?
- 3- They are needed for computing morbidity, mortality and fertility rates.

# 9)

## Items to be covered during health education and counseling:

- 1- Effectiveness of methods.
- 2- Advantages and disadvantages of methods.
- 3- Side effects and complications.
- 4- Methods most suitable for them
- 5- How to use the method helps to increase the use effectiveness of some methods.
- 6- STD prevention, providers can explain safe behavior, abstinence, and condom use.
- 7- When to return: some methods require return visits for more supplies. In contrast, some methods e.g. IUDs require at most one return visit.





### The need for a special health care program for under-fives:

1. The under-fives age group represents a large sector of the total population. In Egypt, it constituted about 11.5% of the total population. (UNICEF, 2013). ① 11.5%
2. They are a vulnerable group as they have biological and psychological needs inherent in the processes of growth and development. ② Vulnerable
3. They have high morbidity (e.g. acute respiratory infections, diarrheal diseases, malnutrition, etc.....) ③ ↑ morb
4. They have high mortality (In some developing countries, nearly 50% of total deaths occur among under five children in developing countries and less than 5% in the developed countries) ④ ↑ mortality
5. Most of the diseases that cause morbidity and mortality in children are preventable by the primary level of prevention (e.g. immunization, sound nutrition, health education and environmental sanitation). ⑤ Preventive dis
6. Prevention of certain adulthood health problems could be initiated in childhood period (e.g. early treatment of streptococcal infection prevents rheumatic heart disease, obesity, hypertension, cardiovascular diseases) ⑥ Early treatment



Alexandria University

Faculty of Medicine

4<sup>th</sup> Year End of Semester Examination

Community Medicine

Date: 19 February 2013

Time allowed: One and quarter hours

Total marks: 40 marks

Essay Questions

All questions to be answered

- 1) Write about German measles vaccine: type, mode of administration, duration of immunity, indications and contraindications. (2.5 marks)
- 2) List personal factors affecting occurrence of Cholera (3 marks)
- 3) Mention pre-exposure prophylactic measures for rabies (2.5 marks)
- 4) Mention preventive measures against Anthrax among travellers. X (3 marks)
- 5) Give reasons why coronary heart diseases death rates in developing countries are lower than those in developed ones. (2 marks)
- 6) What is meant by "Encapsulation" as a method of healthcare waste treatment? mention its advantages. (3 marks)
- 7) List duties of hospital epidemiologist regarding healthcare associated infection control. (3 marks)
- 8) Enumerate measures for managing the population problem in Egypt (3 marks)
- 9) List characteristics of an occupational disease → (3 marks)
- 10) List impact of mental illness on the community → (3 marks)
- 11) Enumerate screening tests recommended for elderly population → (3 marks)
- 12) Mention the referral system through school health insurance channels → (3 marks)
- 13) Write down classification of sensory disabilities. → (3 marks)
- 14) What are the investigations done during premarital examination? → (3 marks)

© Good luck ©



# 1) -----

## 2. Immunization:

The primary purpose of rubella vaccination is to prevent congenital rubella syndrome. This is done by the use of the live attenuated rubella virus vaccine. This vaccine is recommended in all countries where control or elimination of congenital rubella.

The vaccine is given subcutaneous either monovalent or in combination (MMR). In some countries, routine immunization is given to girls between 11 and 13 years of age without prior antibody testing. Also it is recommended for susceptible women in the immediate post-partum period, teachers, nurses, doctors and other staff

# 3) -----

### A- Pre - exposure

Vaccination of high risk group is recommended to vaccinate those at risk of exposure. They can be given the Human cell diploid vaccine (HCDV), prepared in culture of human diploid fibroblast cells. 3 doses, 1 ml intramuscular injection in the deltoid region are administered, at 0, 7, 21 days. If the risk continues, booster doses should be given every two years.

The vaccine is safe, potent and has few adverse effects.

Pre (0, 7, 21) # dotted IM 1ml  
0.5 ml IM in delt  
Vaccination  
home



place

The vast majority of the population in almost all countries is at risk of developing cardiovascular diseases.

Epidemics of Cardiovascular diseases are established now in the developing countries, due to increasing longevity, urbanization and western type of life style. This may be due to their exposure to major risk factors as tobacco, inappropriate diet and physical in-activities. At the same time they often do not have the benefit of preventive programs compared to people in high-income countries. Moreover, patients having these diseases have less access to effective and equitable health care services which respond to their needs (including early detection services). As a result, many people in low- and middle-income countries die younger from cardiovascular diseases often in their most productive years. This places a heavy burden on the economies of low- and middle-income countries.

- The poorest people in low- and middle-income countries are affected most. At the household level, sufficient evidence is emerging to prove that CVDs and other non-communicable diseases contribute to poverty due to catastrophic health spending.
- Cardiovascular diseases are greater in urban areas than rural areas reflecting acquisition of risky behaviors as tobacco consumption, lack of physical activity and consumption of unhealthy diets.

7)



8)



مكرر



7. Environmental P...

### Management of population problem of Egypt

- **Economic development** of the country: Efforts should be carried out to achieve industrialization, improve agriculture and develop more rural areas and to involve women to be gainfully employed. It is important to make maximal benefit of community resources.
- **Reclamation of land**, resettling of families and developing new cities. This will help in redistribution of the population and lower population density.
- **Social development:** More efforts should be directed towards education especially for females and adults. Illiteracy and low status of women are factors behind high fertility.
- **Improve the standard of environmental health.**
- **Provision of high quality health services** as maternal and child health and family planning that are acceptable, accessible and properly monitored and evaluated. Efforts should be done for effective prevention of diseases and child mortality.
- **Health education** should be strengthened & properly planned to provide better awareness about population problem issues and conse-

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fici

# 10)



... of the lives of the family members.

## 2. Effect on the community

- The cost of providing the care for the mentally ill.
- The loss of productivity, with increase of economic cost.
- Some legal problems (including violence) can be associated with some mental disorders.

# 12)



## Referral system through school health insurance channels

1. All detected cases are referred to **the school physician** in the school clinic for diagnosis and treatment. Cases that need further evaluation or special care are referred to a **specialist** in a polyclinic or affiliated hospital. Referral to a **consultant** in the School Pupils' Hospital is done through the specialist when it is needed. Then the case is referred back to school physician or health visitor for follow up.
2. Pupils with **chronic disorders** are referred to a specialist for outlining the management plan. School physician is responsible for follow up of such cases as well as renewal of the prescribed drugs.

The provided health services are strengthened by **social support** services that provide the following:

1. **Home visits** and guidance for pupils with certain health problems as scabies, tuberculosis, rheumatic heart, and malnutrition.
2. Provide the required **rehabilitative equipment** as hearing aids and artificial limbs.
3. **Health education** for families regarding problems of their children.





## Content

### 1. Medical examination:

- a. Personal medical history, family history and family pedigree. *complete*
- b. Clinical Examination (general and systematic examination).
- c. Laboratory investigations:

- Routine obligatory investigations (complete blood picture - (Rh typing) - random blood sugar)
- Complementary optional investigations to be determined through history taking, clinical examination and results of the routine **obligatory Investigations.** *X-ray / chemical*



Alexandria University  
Faculty of Medicine  
Community Medicine Department



Date: 1 June 2013

Time allowed: THREE hours

7

دور يونيو ٢٠١٣ لطلاب الفرقة السادسة (باقون للاعادة)  
و مقرر عليهم مادة طب المجتمع

### Part I

Write short account on:

1. Four sources of epidemiological data. → (8 marks)
2. Four causes of sex differences in disease occurrence. → (8 marks)
3. Three explanations of the increase in the secular trend of cancer. → (6 marks)
4. Three delayed health impacts of air pollution. → (7 marks)
5. Three modes of transmission of Brucellosis. (6 marks)
6. Factors making Measles a candidate for eradication. (8 marks)
7. Three preventive measures applied to carriers, giving example on each. (8 marks)
8. Influenza vaccine (Type and indications). (7 marks)
9. Three causes of re-emerging of Tuberculosis. (8 marks)
10. Four preventive measures for Cholera. (8 marks)
11. Local post exposure preventive measures of Rabies for a person bitten by dog. (8 marks)
12. Phases of Malaria eradication program. → (8 marks)

# 1)

## Categories of data collected during surveillance of a communicable disease

- 1- Morbidity and mortality data:** The number of cases and /or deaths, the time and place of occurrence (onset), personal factors and other determinants of the disease.
- 2- Laboratory results:** <sup>most important source</sup> The role of public health laboratory is to confirm the cases, determine bacterial resistance to antibiotics, genomic sequencing of causative agent (e.g. measles virus), the level of immunity of the population, vaccine potency and microbial contamination of the environment.
- 3- Data about the preventive and control measures:** such as the number of vaccinated, the number of houses sprayed by insecticides, the number of contacts received chemoprophylaxis. <sup>(meningitis)</sup>
- 4- Data related to the environmental conditions:** the percent of people supplied by pure water and coverage of services for garbage and excreta disposal.
- 5- Data about vector of disease:** <sup>vector control</sup> type, habits and susceptibility to insecticides. <sup>Endomology</sup>
- 6- Data about the reservoir:** <sup>animal (zoonosis)</sup> type and distribution. <sup>with sections approach</sup> <sup>tropical medicine</sup>
- 7- Data about the population:** <sup>demography</sup> size, distribution and composition (demographic data). <sup>nutrition</sup>



# 5)

## **Mode of Transmission:**

### **1. Contact transmission:**

Most commonly infection occurs by direct contact with infected animals or their tissues, blood, placenta and aborted fetus.

### **2. Common vehicle:**

Infection may occur by ingestion of unpasteurized infected milk or milk products (soft cheese), also drinking water contaminated with excreta of infected animals could serve as a vehicle.

### **3. Airborne**

The environment of a cowshed may be heavily infected. Few people living in and working in this environment can escape inhalation of infected dust. Brucellosis may be inhaled in form of droplet nuclei in slaughter houses, meat processing plants and laboratories. These droplet nuclei may remain suspended in atmosphere.

# 6)

Measles like small pox has several favorable factors that make it a possible candidate for eradication. These are

- The virus exists in a single serotype antigenically stable that provides durable immunity.
- Absence of animal reservoir.
- An effective live vaccine is available which is relatively stable and produces durable immunity.
- No chronic carrier state.

# 7) -----

## B- Measures applied to carriers:

1- **Detection of carriers** is important in diseases in which carriers are an important reservoir of infection, e.g. enteric fever. However, the value of detection for carriers depends on:

- a) The proportion of carriers in the community.
- b) The occupation of the carriers and its intimacy to contacts.

2- **Exclusion from work:** this depends on type of work.

3- **Treatment for the carrier state.**

4- **Health education and follow up of carriers.**

(Food via Typhoid carrier)  
(teacher) diptheria

# 8) ----- کور -----

# 9) ----- کور -----

## 1. Sanitary measures: These include:

- a. Protection, purification and chlorination of public water supply.
- b. Sanitary disposal of human excreta.
- c. Adopting safe practices in food handling, sanitary supervision of food serving in public places especially food eaten raw, also limiting marketing of shellfish.
- d. Applying fly control measures.

**2. Health education:** is important and should focus on behaviors that promote specific hygiene practices as washing hands after defecation and before handling foods, covering food etc.

**3. Vaccination** with oral vaccine: There are two distinct types of oral cholera vaccine namely:

### a. Live attenuated oral vaccine:

- The vaccine contains live attenuated *Vibrio cholera* O1 that stimulate formation of antibodies which neutralize the cholera agent.
- A single dose is administered orally.
- It is highly protective (up to 90%) and extremely immunogenic.

### b. Killed oral vaccine (the WC/rBS):

- It is composed of heat or formalin-killed whole-cell *Vibrio cholera* O1, classical and El-Tor with purified recombinant B-subunit of cholera toxoid (WC/rBS)
- Stimulates both antibacterial and antitoxic antibodies and attempts to stimulate the intestinal mucosal immune response similar to that induced by natural infection.
- It is safe and confers a rapid short term protection of 85-90% during 6 months in all age groups after administration.
- Two doses, one or two weeks apart are administered. A booster dose can be administered after 2 years for adults and children over six years.

## NOTE

These two new oral cholera vaccines are (a) easily administered, (b) provide better immunity that lasts for two years and (c) have fewer side effects.

As these vaccines do not provide 100% protection, basic hygienic precautions should always be followed. However the most effective preventive measures are those related to the protection of food and water supplies from fecal contamination.



# 12)



## Malaria eradication program

**Malaria eradication passes through phases, each with a specific time:**

**1-Preparatory phase**

**2-Attack phase**

**3- Consolidation phase**

**4-Maintenance phase**

## Part II

Write short account on

1. Verbal and non verbal types of communication. (7 marks)
2. Two advantages of group discussion as a method of health education. (8 marks)
3. How to ensure equity of distribution as a principle of primary health care. (7 marks)
4. Objectives of expanded program of immunization. (8 marks)
5. Equations for calculation of three fertility rates. (6 marks)
6. Four advantages of food balance sheet as a method of nutritional assessment. (8 marks)
7. Laboratory investigations for pregnant females in antenatal care. (8 marks)
8. Two examples of usage of medications to reduce the onset of illness among the elderly. (6 marks)
9. Criteria for identifying at risk children in infant health care. (8 marks)
10. Infant mortality rate (Formula, importance and causes) (8 marks)
11. Control measures of communicable diseases among pupils as included in school health program. (8 marks)
12. Content and objectives of pre-placement examination in occupational health program. (8 marks)

*Good Luck*

## 2)

### 4. Group discussions:

Sharing info.  
Change attitude  
Solve Problem

Group discussion can help in sharing information<sup>①</sup>, change attitudes<sup>②</sup> and solve<sup>③</sup> problems. Size of the group depends on the purpose of the discussion.

and 15-20

a- To solve a problem, the size should be 2-3 persons only.

and 4-6

b- To solve a problem and change attitudes, the size should be 4-6 person.

c- To share information and change attitudes, the size should be 7-15.

## 3)

seriy.

### How to ensure equity in distribution of health care?

- ↑ number 1. Increase number of services to cover the whole population of the community.
- Disperse 2. Disperse health care services into the most remote rural areas and under-served urban ones.
- Transport 3. Improve means of transportation.
- Determine 4. Determine the population to be served in the catchment areas and identify vulnerable groups and those to be reached through organized outreach



## Objectives of EPI:

1. To achieve and maintain almost 100% coverage with all EPI vaccines.

2. To achieve global **eradication** of polio and then maintain polio free status.

3. To **eliminate** measles by immunization of targets with two doses of measles vaccine. (national campaign)

4. To **control** hepatitis B infection by reducing sero-prevalence of HB surface antigen (HBsAg) to less than 1% among children under five years old.

5. To **eliminate** neonatal tetanus.

6. To maintain zero level of **diphtheria**. (↓ incidence)

7. To prevent severe forms of **TB** such as TB meningitis and miliary TB.

8. To reduce the incidence of **whooping cough**, **mumps**, **rubella** and **Hib infection**.

9. To maintain immunization safety.

10. To prepare for introduction of **new vaccines**, according to disease burden and cost effectiveness of the vaccine.

Ex. kindia  
(no disease)

Small Pox

8 (lab 3, 2000)

Eradicate  
(Polio)

Elimination

(measles  
+ tetanus neonatal)

horses  
rabies  
etc.

eradicate

↓ Incidence

(diphtheria  
Pertussis  
Mumps  
Rubella  
H. Influenza)

BCG  
MMR  
OPV  
live attenuated

5)

GFR =

$$\frac{\text{Total number of live births in a certain year and locality}}{\text{mid-year reproductive female population (15-49) in the same year \& locality}} \times 1000$$
 (= ...Live births/1000 female population aged 15-49 years).

Age specific fertility rate =

$$\frac{\text{Total number of live births born by females in a specific age group in certain year and locality}}{\text{Female population in the same specific age group}} \times 1000$$
 (= ...Live births/1000 female population in specified age group).

children born to a woman or a cohort of 1000 women through out her or their child bearing period subjected to prevailing age specific fertility rates.

(TFR = ....children born/woman).

two assumptions. First, age specific fertility rates remain constant over the reproductive life. Second



### 3. Laboratory investigations:

#### 1. Blood examination for :

- **Hemoglobin concentration:** this should be done periodically or at least once every trimester for detection of anemia.

- **ABO blood grouping** for cross matching in emergencies.

- **Rh factor** if the mother is Rh negative the husband should be examined, if he is Rh positive there is a possibility of erythroblastosis fetalis especially if it is the second or third child. In such condition, mother should be examined for the level of Rh antibodies in blood between the 32<sup>nd</sup> and 36<sup>th</sup> week of pregnancy.

- **Serologic test** for syphilis (Wassermann reaction).

#### 2. Urine examination for:

- **Pregnancy test** to verify pregnancy.

gauri 20.10.19

- **Albumin and sugar** detection should be done periodically

Pre-eclampsia

Gestational diabetes

**N.B:** Avoid as much as possible chest X-ray for subsequent danger of irradiating the fetal gonads and the remote danger of developing leukemia.

Sugar blood investigation



# 10)

## 1. Infant mortality rate (IMR):

It is an age specific mortality rate. It is computed by the following formula:

IMR

$$= \frac{\text{Total number of infant deaths (0- < 1 year) in a given year and locality} \times 1000}{\text{Total number of live births in the same year and locality}}$$

In Egypt, it was 18/1000 live births (UNICEF, 2012)

Infant mortality is universally recognized, not only as a sensitive indicator of health status of children, but also as an indicator of community development. It is a measure of the effect of the different environmental factors surrounding the infant during the first year of life. Poverty, bad sanitary conditions, overcrowding, poor nutrition and ignorance of mothers all contribute to infant deaths.

**The main causes of infant mortality are:** (Ordered by frequency)

1. ARI: acute respiratory infections; bronchitis and bronchopneumonia.
2. Gastroenteritis and dehydration.
3. Low birth weight and congenital anomalies.

# 11)

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# 12)

## 2) Pre-placement (pre-employment) examination:

Each worker is subjected to a pre-placement examination before joining a new job. It helps in suitable placement of workers according to their physical, mental & emotional capacities, so that workers can perform with an acceptable degree of efficiency and without endangering their own health and safety or that of others.

### Objectives of pre-placement examination:

Proper job placement of workers clearly results in better performance, less absenteeism, lower accident rates, less chance of aggravating existing diseases and probably a longer production working life. This aim could be achieved through:

- ← Proper placement of workers according to their medical and physical abilities to perform their job efficiently.
- ← Put a base-line of the health status of the workers at the start of work to be used in compensation claims.

To achieve these objectives, health assessment of workers should be performed:

### Health assessment includes the following:

- Personal, family and medical history.
- Detailed past occupational history.
- Complete physical examination.
- Laboratory investigations & appropriate screening tests according to the nature of the job.

specific tests  
الامتحانات المحددة  
التي  
تتبعها  
وفقاً  
لنوع  
العمل





5



Alexandria University  
Faculty of Medicine  
Fourth year: End of Semester Examination  
Community Medicine

Date: 10 July 2013  
Total Marks: 40 Marks

Time allowed: 1.15 hours  
All Questions to Be Answered

Give an account on each of the followings:

- 1) Mumps vaccine: type, mode of administration, efficacy, and contraindications. (3 marks)
- 2) Control measures for Cholera. (3 marks)
- 3) Mode of transmission of Poliomyelitis. (3 marks)
- 4) Control measures for Botulism. (2 marks)
- 5) The relation between infection and cancer. (3 marks)
- 6) Different situations of post-exposure prophylaxis for rabies. (3 marks)
- 7) Chemoprophylaxis for Malaria: Indications, drugs used, timing and duration. (3 marks)
- 8) Equity in distribution is one of principles of primary health care. Define it and mention how to ensure equity in distribution of health care. (3 marks)
- 9) Characteristics of demographic transition stage in which Egypt is present. (3 marks)
- 10) Child death rate: Definition, causes of death and its significance. (3 marks)
- 11) Environmental and social risk factors for work related injuries. (2 marks)
- 12) Perinatal causes of disabilities. (3 marks)
- 13) Most common non-communicable diseases among school children. (3 marks)
- 14) Preventive measures for hypertensive disorders of pregnancy. (3 marks)

GOOD LUCK



## 2. Routine mumps vaccination

- A highly effective live attenuated vaccine is now available for the prevention of mumps. The vaccine is cold chain dependent and should be protected against light. A single dose produces detectable antibodies in 95% of recipients. The vaccine is also available as combined vaccine (MMR vaccine)
- The vaccine is used now in Egypt in the compulsory vaccination schedule. Countries with low coverage with the first dose may recommend a second dose at 9-12 years of age.
- Mumps vaccine is contraindicated in pregnant females or those planning to be pregnant within the next three months, patients who are immunodeficient (disease or drug induced immunosuppressant) or those who are severely ill.
- Mumps vaccine is indicated for teachers, health workers and military personnel.

### NOTE

The use of mumps vaccine is still a matter of debate. Some argue that there are no good reasons for trying to interfere with natural exposure during childhood. Its use may be considered primarily in susceptible adolescents especially males who had not mumps as the disease tends to be severe if occurs in adulthood.

**Control:****1. Report to local health authority and WHO.**

All health workers should be aware of the standard case definition:

**A) Suspected case:**

- In an area where cholera is not endemic:

Severe dehydration or death from acute watery diarrhea in a patient aged 5 years or more.

- In an area where cholera is endemic:

Acute watery diarrhea with or without vomiting in a patient aged 5 years or more

**B) Confirmed case:**

A suspected case that is laboratory-confirmed by isolation of *Vibrio cholerae* O1 or O139 from the stool samples of any patient with diarrhea.

**2. Isolation:** severely ill patients should be isolated in a hospital, with standard precautions. Less severe cases can be managed at home.

**3. Specific treatment:** prompt fluid therapy with adequate volumes of electrolyte solution. Antimicrobial agents (to which the strain is sensitive) shorten the duration of diarrhea and the duration of vibrio excretion: for adults Tetracycline drugs (if strain is sensitive)

**4. Disinfection:** concurrent disinfection required for linen and articles used by the patient. Feces and vomitus can be disposed of into the toilet without preliminary disinfection, except in areas without an adequate sewage disposal system. Terminal cleaning of the room and articles used by the patient is required.

**5. Measures towards contacts:**

1. Surveillance for the incubation period (5 days).
2. Stool culture of contacts should be done for fear of being carriers.
3. Searching for missed cases among those possibly exposed to a common source.
4. Chemoprophylaxis is recommended (tetracycline)
5. Health education should always be provided.

3)

### **Mode of transmission**

#### **a) Contact transmission**

##### **i-Indirect contact:**

Infection may spread by contaminated fingers with fecal materials. This occurs in areas with lack of personal hygiene especially in young children in developing countries. Soiled hands with respiratory discharge can transmit the disease. Also Indirect contact with articles contaminated with pharyngeal discharge of infected person.

##### **ii-Droplet:**

In developed countries with high standard of sanitation, droplet is a common mode of transmission during the acute phase of the disease when the virus is in the throat.

#### **b) Common vehicle:**

Vehicle of transmission can be food or drinks that are contaminated with Fecal matters.

4)

### **Control:**

#### **1. Report cases to local health authority.**

All those involved in diagnosing, case finding and reporting should be aware of the standard case definition:

##### **A) Suspected cases:**

It is a patient with unexplained diplopia, blurred vision and/ or bulbar weakness accompanied by symmetrical paralysis.

##### **B) Confirmed case:**

It is a clinically compatible case with laboratory confirmation or that occurs among persons shared the same food.

#### **2. Isolation is not indicated.**

#### **3. Specific treatment:**

Cases are treated by intravenous and intramuscular injection of botulinum trivalent antitoxin (A, B and E). Immediate access to an Intensive care unit is essential, so that respiratory failure can be anticipated and managed promptly.



#### **4 .Investigate all contacts and source of infection:**

- Study recent food history of those who are ill and investigate all suspected foods
- Those that are known to have eaten from contaminated food should be kept under observation and given enemas and a purgative. Treatment with antitoxin may be given if indicated.

#### **5. Detoxify implicated food**

This is done by boiling the food before discarding the containers. Then bury the containers and food deeply in soil to prevent animals to ingest them.

5)



**b) Infection:**

*Schistosomiasis (urinary bladder)*

Several studies indicated that specific viral and parasitic infestation may be related to specific cancer. Examples of **viruses** associated with cancer are

- Hepatitis B virus is causally related to hepato-cellular carcinoma.
- Epstein-Barr virus (EBV) is associated with Burkett's lymphoma and nasopharyngeal carcinoma.
- Human papilloma virus (HPV) is a suspect in cancer cervix.
- Hodgkin's disease is also believed to be of viral origin.
- Parasitic infection may also increase the risk of cancer, as example schistosomiasis and urinary bladder cancer

*Human T cell ~ Lymphoma*

8)



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# 10)

It is the number of deaths of children aged 1 – 4 years per 1000 children in the same age group in a given year and locality . It thus excludes infant mortality

This rate is a more refined indicator of the **social situation** in a country than infant mortality rate. It reflects the adverse environmental health hazards (e.g. malnutrition, poor hygiene, infections and injuries). It is also affected by economic, educational and cultural characteristics of the family.

The child death rate is computed by the following formula:

*Child death rate*

*Total number of deaths of children aged 1 – 4 years  
in a given year and locality*

$$= \frac{\text{Total number of deaths of children aged 1 – 4 years in a given year and locality}}{\text{Mid year number of children aged 1 – 4 years in the same year and locality}} \times 1000$$

In Egypt the 1-4 child death rate was 11.3/1000 children aged 1 – 4 years (DHS 2000).

**Main causes of death in children aged 1-4 years old:**

1. ARI
2. Gastroenteritis and dehydration.
3. Other infections coupled with malnutrition.
4. Injuries.



# 11)

## **C) Environmental and Social Factors:**

- 1- Bad housekeeping and poor layout of machines will increase injury risk.
- 2- High level of noise, extremes of temperature, bad ventilation, poor lighting, and excessive indoor air pollution may predispose to injury.
- 3- Job unsatisfaction and bad relation among workers, supervisors, and the administration will increase the injury hazard.
- 4- Work schedule: long duration, irregular distribution of rest periods and shift work.
- 5- Lack of recreational and leisure activities.

# 13)

## **II. Early detection and correction of non-communicable diseases**

- Most common non-communicable diseases among school-age children are:
1. **Nutritional problems:** e.g. overweight and obesity, underweight, stunted growth, deficiencies related to protein, vitamins, calcium and iron.
  2. **Dental defects:** e.g. dental caries and diseases of gums.
  3. **Errors of refraction** including myopia, hypermetropia and astigmatism.
  4. **Hearing impairment:** due to frequent, inadequately treated middle ear infections.
  5. **Adenoids.**
  6. **Chronic health problems:** as rheumatic heart diseases, diabetes, epilepsy, and bronchial asthma.
  7. **Postural problems:** as lordosis and kyphosis.
  8. **Speech defects.**
  9. **Emotional and behavioral** problems especially in adolescence.

8

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Alexandria University  
Faculty of Medicine  
Community Medicine Department  
International Program  
Fourth Year End of Semester Exam



Date: July 28, 2013

Total marks: 40 marks

All Questions to be Attempted

Time allowed: 1.15 hours

Give an account on:

1. Control measures for contacts of pneumonic plague (3 marks)

2. Control measures for (infants born) to HBs Ag positive mothers (2 marks)

3. Three epidemic measures for cholera (3 marks)

4. Control measures for botulism (3 marks)

5. Three reasons for reemergence of TB as a major public health problem worldwide (3 marks)

6. Primary preventive measures for Coronary heart disease (5 marks)

7. Definition and reasons for missed opportunity for immunization (5 marks)

8. Biological risk pregnancy (3 marks)

9. Three characteristics of the population pyramid of developing communities (3 marks)

10. Four purposes of school health appraisal (4 marks)

11. Aim of tertiary prevention of disability (3 marks)

12. Six duties for the industrial physician (3 marks)

Good luck



## 1. Report to local health authority and WHO.

All health workers should be aware of the standard case definition:

Standard case definition:

**A) Suspected case** is characterized by rapid onset of fever chills, headache and severe malaise, together with the following symptoms depending on whether it is bubonic or pneumonic form:

- i) Bubonic form: extreme painful swelling of lymph glands.
- ii) Pneumonic form: cough with blood stained sputum, chest pain and difficulty breathing.

**B) Confirmed case** is a suspected case that is confirmed laboratory by

- i) Isolation of *Yersinia pestis* from bubos, CSF or sputum, or
- ii) Elevation of antibodies.

## 2. Isolation:

In case of pneumonic plague isolation should be in a special place while in bubonic plague it can be done in the communicable disease hospital.

## 3. Treatment

Patients are treated by tetracycline, streptomycin, and chloramphenicol.

## 4. Disinfection:

Concurrent and terminal disinfection of sputum, purulent discharge and soiled articles in case of pneumonic plague should be carried out. While in bubonic plague it means the use of insecticides. Bodies of persons who died from plague should be handled with strict aseptic precautions.

## 5. Contacts:

A. Contacts of bubonic plague should be disinfected and observed for six days

Contacts of pneumonic plague should be isolated for six days.



## 2)



- Infants born to HBs Ag positive mothers should receive a single dose of vaccine within 12 hours of birth and HB Ig (0.5 ml IM). The first dose of vaccine to be given concurrently with HB Ig but at a separate sites; second and third dose of vaccine without HB Ig (one and six months later).
- Investigation of contacts and source of infection

*relief*

## 3)



### Epidemic measures:

- Super chlorination of water. Ensure safe sewage disposal.
- Assure careful supervision of food and drink preparation.
- Determine the source of infection and circumstances of transmission. According to the findings plan control measures.
- Educate the population at risk about the need to seek appropriate treatment without delay.
- Oral cholera vaccines are recommended to control cholera outbreaks.
- Disseminate appropriate information and educational releases to reduce public hysteria.
- Provide effective treatment facilities.



## Control:

### 1. Report cases to local health authority.

All those involved in diagnosing, case finding and reporting should be aware of the standard case definition:

#### A) Suspected cases:

It is a patient with unexplained diplopia, blurred vision and/ or bulbar weakness accompanied by symmetrical paralysis.

#### B) Confirmed case:

It is a clinically compatible case with laboratory confirmation or that occurs among persons shared the same food.

### 2. Isolation is not indicated.

### 3. Specific treatment:

Cases are treated by intravenous and intramuscular injection of botulinum trivalent antitoxin (A, B and E). Immediate access to an Intensive care unit is essential, so that respiratory failure can be anticipated and managed promptly.

### 4. Investigate all contacts and source of infection:

- Study recent food history of those who are ill and investigate all suspected food
- Those that are known to have eaten from contaminated food should be kept under observation and given enemas and a purgative. Treatment with antitoxin may be given if indicated.

### 5. Detoxify implicated food

This is done by boiling the food before discarding the containers. Then bury the containers and food deeply in soil to prevent animals to ingest them.

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6)

## Prevention of cardiovascular diseases

### 1. Avoid the emergence and establishment of factors that contribute to an elevated risk:

Primordial prevention is defined as prevention of the development of risk factors before they happen in the community. It is known that cardiovascular diseases occur in a large scale only if the basic underlying causes are present. Successful implementation of primordial prevention in the context of cardiovascular diseases and other chronic diseases requires that healthy behaviors become normative e.g. non-smoking society, attainment of ideal body weight, healthy diet and physical activity by the community members.

### 2. Support Tobacco free initiatives (TFI):

The tobacco free initiatives are one of the World Health Organization's major public policy initiatives, commenced in May 1998 to reduce smoking and the harmful effects of the use of tobacco products on human health.

### 3. Health education

This is required to change life styles behaviors associated with cardiovascular diseases. Health education messages should include:

#### a) Dietary messages should include:

- Eat balanced diet.
- Eat daily fresh fruits and vegetables.
- Reduce the intake of saturated fats

**b) Smoking:** messages should stress avoidance or stopping of this behavior.

**c) Physical activities:** messages should stress the importance of having regular physical activity as part of normal daily life since childhood.

**d) Other diseases:** health education messages should stress the importance of screening, and compliance to treatment prescribed for health conditions re-



lated to cardiovascular diseases.

Non Communicable diseases

#### **4. Apply the high risk approach**

This includes

- a. Identify high risk group**
- b. Proper management of the risk factor**

This may include

##### **(i) Proper management of hypertension**

The goal of the program is to reduce the mean population blood pressure levels, where 2 to 3 mmHg decrease would produce a large reduction in the incidence of cardiovascular complications. This may be achieved through decreased salt intake, decreased alcohol consumption, regular physical activity and weight control.

##### **(ii) Monitor serum cholesterol**

It is important to monitor the level of cholesterol, and lipoprotein levels

(LDL and HDL) in the blood. A total **cholesterol/HDL ratio** of less than 3.5 has been recommended as a clinical goal for cardiovascular prevention.

##### **(iii) Health education**

This is needed to change lifestyle behavior and reduce weight. In case of smoking the person should be helped to break the smoking habit permanently- nicotine chewing gum can be tried to wean them from smoking.

## Missed opportunity for immunization:

Missed opportunity for immunization occurs when a child or women in child bearing period comes to the health facility and does not receive any of the vaccine doses for which he or she is eligible. The reasons for missed opportunity are:

**Health workers' practices** e.g. not opening multi-dose vial for a small number of attendants to avoid vaccine wastage.

**Logistical problems** e.g. vaccine shortage, poor organization and inefficient scheduling.

**Failure to administer simultaneously** all the vaccines for which the child was eligible.

## False contraindications to immunization

These are conditions that are inappropriate and wrongly considered contraindications by workers or mothers or both eg:

Minor illness such as upper respiratory tract infections or diarrhea with fever  $< 38.5^{\circ}\text{C}$ .

Allergy, asthma and other atopic manifestations.

Prematurity.

Malnutrition.

Low dose corticosteroids or locally acting (topical or inhaled) steroids.

Handwritten notes:  
 - Minor illness: Allergy, asthma, vaccine wastage  
 - Prematurity: no passive immunity  
 - Malnutrition: vaccine 1 mg oil, 2 mg oil, 3 mg oil, 4 mg oil, 5 mg oil, 6 mg oil, 7 mg oil, 8 mg oil, 9 mg oil, 10 mg oil  
 - Low dose corticosteroids: Zero dose HBV why?

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12) ----- کړر -----





Alexandria University  
Faculty of Medicine  
Community Medicine and Public Health  
Fourth Year Final Exam

Date: 5 July 2014

Total marks: 50 marks

Time allowed: 90 minutes

All questions to be answered

Part I

Write short notes on:

1. Strategies of polio eradication (2.5 marks)
2. Secondary preventive measures of STDs (3 marks)
3. Factors responsible for resurgence of malaria (3 marks)
4. Five of the modifiable risk factors of CHD (2.5 marks)
5. Indications of inactivated influenza vaccine (2.5 marks)
6. Why spores of bacillus anthracis used in bioterrorism? (2.5 marks)
7. Six safety precautions for health care workers for prevention of HIV infection (3 marks)
8. International measures of plague (3 marks)
9. Standard control measures for infection control program (3 marks)

## Strategies of polio eradication

There are four core strategies to stop transmission of the wild poliovirus. They include:

1. Routine immunization of infants (see EPI)
2. Supplementary immunization: National immunization days and Mopping up immunization (see EPI)
3. Surveillance of acute flaccid paralysis.
4. An effective virological laboratory.

**-The (AFP) surveillance** aims to report and investigate all cases of acute flaccid paralysis occurring in children aged 15 years, and all cases of suspected polio in persons of any age.

**-Stool specimens** from every AFP case are subjected to virological analysis in a WHO accredited laboratory to determine if it is poliovirus or not.

# 2)

## General principles of prevention and control of STD Prevention

### 1- Health education:

The target groups for health education intervention include the general public, adolescents, youth, prisoners, and health personnel. Health education activities should build an attitude in people as regards their sexual responsibility. It should show clearly the ethical and moral basis of sexuality. It should emphasize that the Egyptian culture, values and their religion prohibit extramarital relation and homosexuality. Health education should deal with value conflicts between the traditional value of chastity and the recent ideas of independence, freedom from supervision and equal rights for both sexes.

### 2- Provision of recreation facilities

Providing recreation facilities particularly that related to sports in the community and schools for adolescence and youth can play an important part in prevention.

### 3- Vaccination

Up till now the only available vaccines are those of HB vaccine and human papilloma virus vaccine.

# 3)

## RESURGENCE OF MALARIA:

At the beginning, malaria eradication programs were highly successful but in many countries, the resurgence had grown to an epidemic form. The resurgence of malaria is attributed to the followings:

Shortage of insecticides

b- Development of insecticides resistant vectors.

c- Shortage of trained field workers

d- Shortage of anti-malaria drugs

e- Development of parasites resistant to anti-malaria drugs.

f- Defects malaria control program:

g - Premature take off into consolidation maintenance phase.

h- Inadequate case detection.





## A- Factors related to life style

### 1- Tobacco use:

Greatest risk is associated with early initiation ( $< 16$  years); passive smoking is an additional risk. Cessation of smoking reduces the risk of coronary heart by 50-70%.

The possible mechanisms include:

- Nicotine increases adrenergic stimulation which raises blood pressure, heart rate, artery spasm and increases oxygen demand of the heart muscles.
- Increased carbon monoxide damages the endothelium lining and induces atherosclerotic plaques.
- Decreased serum level of high density lipoproteins (HDL) and increases low density lipoproteins (LDL)

### 2- Physical inactivity:

It is a greater risk of cardiovascular diseases and its other risk factors (glucose metabolism, diabetes mellitus, blood coagulation, obesity, high blood pressure, worsening lipid profile). Sixty percent of global population is engaged in a sedentary life style associated with modernization, urbanization, and mechanized transportation.



### **3- Unhealthy diet:**

The risk of cardiovascular diseases increases with refined sugar, low fruit, vegetable and fiber content as well as high saturated fat intake.

## **B- Medical conditions**

### **1- Diabetes mellitus:**

It damages both peripheral and coronary blood vessel. The risk of coronary heart disease is 2-3 times higher in diabetics than non-diabetics. This is due to the higher rates of atherosclerosis.

### **2- Hypertension:**

Hypertension ( $>140/90$  mmHg) is a very important risk factor as it is wide spread, and relatively easy to control. Hypertension accelerates the atherosclerosis especially if hyperlipidaemia is present as well.

### **3- Serum cholesterol:**

Serum cholesterol level is an important risk factor for the incidence of coronary heart disease especially for levels  $>240$  mg/dl. Low density lipoprotein (LDL) cholesterol is the most directly related to CHD. High density lipoprotein (HDL) is a protective factor. Estrogen tends to raise HDL-cholesterol and lower LDL-cholesterol, protection for women in reproductive age.

### **6- Obesity (Body Mass Index $> 30$ ):**

It is a modern worldwide epidemic that elevates the risk of both cardiovascular diseases and diabetes mellitus.

## **C- Other risk factors**

### **1-Type A personality:**

Those with tense type A personalities are more prone to cardiovascular diseases. Type A behavior-characterized by restlessness, hostility, impatience, urgency, etc is associated with increased risk of CVD than the calm (type B behavior).

### **2- Social class:**

In developed countries, cardiovascular diseases are more encountered among less educated and lower socioeconomic groups due to accumulation of risk factors. In

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7) -----

**Person:**

Most cases have occurred among sexually active person aged 20- 49 years. Behaviors and conditions that put individuals at greater risk of contracting HIV

include:

- Having unprotected sex;
- Having another sexually transmitted infection such as syphilis, herpes, Chlamydia, gonorrhea, and bacterial vaginitis; *→ ulcerations & no infection*
- Sharing contaminated needles, syringes and other injecting equipment and drug solutions when injecting drugs;
- Receiving unsafe injections, blood transfusions, medical procedures that involve [unsterile cutting or piercing;] *ear piercing.*
- Experiencing accidental needle stick injuries is a specific hazard for health workers



## 1. Hand hygiene

Wash hand after touching blood, secretions, excretions and contaminated article and after removing gloves. Use plain soap for routine hand washing and antimicrobial agent for specific circumstances.

## 2. Personal protective equipment (PPE)

Wear personal protective equipment. These include gloves, splash shields and eye protection. These are used whenever there is a risk of exposure to blood or other potentially infective material



Figure 3 Wearing gloves is protective

## 3. Aseptic techniques

Use aseptic techniques (surgical scrub and gloving and sterile field). Use good surgical technique.

## 4. Reprocessing of used instruments

Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed properly.

## 5. Environmental cleaning

Cleaning and disinfection of environmental surfaces should be routinely done.

## 6. Proper sharps and waste disposal

Take care to prevent injuries when using needles, scalpels and other sharp instruments and devices. Ensure proper disposal of sharp objects and waste.

# 8)



## International measures:

1. Report to WHO and to adjacent countries of the first case of plague appears in area previously was free from the disease
2. Air and seaports and ships should be rat proof and rodenticides and insecticides should be periodically applied. Measures applicable to ships, aircraft, and land transport arriving from cholera endemic areas are to be applied within the framework of the revised International Health Regulations.
3. International travelers those that arrived from an area with (i) epidemic of pneumonic plague and suspected of significant exposure should be isolated for six days (International Incubation period) and (ii) epidemic bubonic should be disinfected and kept under surveillance for six days from the date of arrival

# 9)



## General Principles of Control

**Control** means measures applied to avoid the spread of the diseases after their occurrence. Hence it aims at reducing the prevalence of these diseases.

Control measures can be classified into:

- I - Measures applied to the agent.
- II - Measures applied to the reservoir of infection:
- III - Measures applied to the contacts.
- IV - Measures applied to the environment.
- V - Measures applied to the host.

Part II

3

Write short notes on:

- ✓ 1. Ways by which the community can participate in health care. (3 marks)
- ✓ 2. Criteria of healthy village. (3 marks)
- ✕ 3. Criteria for successful polio national immunization days. (2.5 marks)
- ✕ 4. Benefits of controlling the population explosion. (3 marks)
- ✓ 5. Factors that favoring acceptance of a contraceptive method. (2.5 marks)
- ✓ 6. Methods of school health education. (3 marks)
- ✓ 7. Diagnostic criteria of an occupational disease. (2.5 marks)
- ✓ 8. Post menopausal hormone replacement therapy has positive and negative effects. Explain this statement. (2.5 marks)
- ✓ 9. Impact of mental illness on the family. (3 marks)

Good Luck



# 1)

## 4. Community participation:

The concept of primary health care emphasizes the need of health care not only for people but also by people. There are many ways in which the community can participate in health care.

### Examples

- ② Participate
- Planning
  - evaluation
  - supervision
  - financial
- They can be involved in defining community health problems and setting up priorities. They can also participate in preparing plans of action with health personnel to solve those problems as well as in supervision and evaluation.
  - They can participate through financial support to cover the cost of some activities of PHC (equipment, drugs, audiovisual aids, furniture, etc).
  - Adopting healthful behaviors such as breast feeding, adequate nutrition, proper

# 2)

## What are these criteria?

- Availability of adequate basic environmental services (water supply, sewage and refuse disposal)
- Accessibility of health care (geographically, socially and functionally) for all rural population.
- High level of health awareness of the population regarding their health problems and factors behind them.
- Satisfaction of basic needs of the population as employment, food supply, education, recreation, etc.



and measles elimination.

### Criteria for successful Polio National Immunization Days

- a- OPV is given to all children in the age group 0-59 months to attain high coverage within 1-3 days.
- b- It is conducted at least in **two rounds** (4-6 weeks apart).
- c- Doses of OPV given are considered **extra-doses** and do not replace the routine doses given during infancy.
- d- NIDs are conducted during low season of polio transmission.
- e- Conduct NIDs annually for at least three years and until polio is reduced from being an endemic disease to a disease that occurs only in focal areas.

### 1- **Health Benefits**

Reduction of morbidity and mortality of both mother and child.

### 2- **Education Benefits**

Reducing the proportion of school-age children in the population, thus reduces burden on schools. Reducing child dependency also allows nations to invest more in education and improve the quality of the future labor force.

### 3- **Economic Benefits**

With fewer children, families will have more available income to save or invest. This constitutes a “demographic bonus”, which may help to improve economic growth, create jobs, and in turn reduce unemployment.

### 4- **Reduced pressure on the environment and public service**

A reduced rate of population growth would provide the opportunity for good sufficient piped water, sanitary environment, good infrastructure, etc.



5)

Factors favoring acceptability of a contraceptive method include:

- Being inexpensive.
- Being independent of coitus.
- Requiring minimal responsibility from the users and minimal intervention from the medical profession.
- Absence of side effects.
- Being reversible.

6)

### Approaches of school health education

1. **Formal health education:** planned health instructions in specific periods in the timetable with formal curricula e.g. nutrition, parasitic infestations and pollution.
2. **Correlated or integrated health education:** health aspects can enrich other fields and make experiences more stimulating for the child. This could involve subject fields (history, mathematics, geography, science, economics, and religion) as well as extracurricular activities (art, music, physical education)
3. **Incidental health education:** opportunities for incidental health education arise naturally in the course of the school day. Simple incidents in school can have meaning in health terms (e.g. medical examination). Also, daily newspaper, radio and television reports frequently have health topics of interest to the pupils.

### Diagnostic criteria of an occupational disease:

- a- History: an occupational history of exposure to a **hazardous** agent or process. *the history*
- b- Physical examination: *Clinical picture coincide with* symptoms & signs of disease **must** coincide with the documented manifestations of the occupational disease.
- c- There is improvement of manifestations away from work and aggravation on getting back to work.
- d- Workplace environment: samples and measurements taken from the work place environment should indicate that the causative agent is present in a sufficient concentration to produce the disease.
- e- Surveying: reveals that workers under the same work condition may have similar manifestations, and an occupational disease is relevant to specific exposure in work sitting in a given body of workers than in the general population, or in other working populations. *other workers are affected also*

8)

# رفش عاوز

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irritability, insomnia

## Management of Menopause:

← <sup>concern</sup> investigation

### 1. Health education and counseling

- Reassure the woman and explain that the associated symptoms are due to menopause and will disappear by time when the body is acclimatized to the new situation.
- Encourage her to:
  - Control diet and have regular exercise.
  - Increase calcium intake in the diet (milk and milk products)
  - Avoid smoking
  - Carry breast self-examination periodically
  - Return to the clinic if any return of bleeding occurs.
  - Come for yearly checkup.

### 2. Interventions

#### Prescriptions

- Calcium Carbonate 500mg 2-3 times daily
- Estrogen ovules or cream for vaginal dryness

#### Screening tests

- Mammography every year
- Yearly pap smear



## The Impact of mental illnesses

Mental illnesses have an impact and a burden on the families, communities and health services.

### 1. Effect on the family:

- It is estimated that one in four families has at least one member currently suffering from mental disorder.
- The families are required to provide physical and emotional support in addition to the negative impact of stigma and discrimination.
- The burden on the families range from economic difficulties to emotional reaction to the illness.
- The stress on the family to cope with disturbed behavior of the patient, the disruption of household routine and the restriction of social activities.
- High expenses for the treatment of mental illness, which can take longer time if the patient is not covered by insurance.
- Families with one member suffering from a mental disorder make a number of adjustments and compromises that prevent other members of the family from achieving their full potential in work, social relationship and leisure.



Fourth Year Exam

①

Community Medicine Department

ESSAY Questions:

Date: 21 / 7 / 2015

Time allowed: 95 minutes

All Questions to be answered

Total marks: 50 marks

**Give an account on:**

1. Modes of transmission of brucellosis. (3 marks)
2. Indicators for success of chronic non communicable disease program. (4 marks)
3. Causes of higher endemicity of Eltor biotype of cholera compared to the classical type. (3 marks)
4. Immunizing agents against rabies (types, modes of administration and uses). (4 marks)
5. Meningococcal meningitis vaccine (type and indications). (3 marks)
6. Contacts of viral hemorrhagic fevers (types, definitions, and indicated control measures for each- in a table). (4 marks)
7. Environmental prenatal causes of childhood disabilities. (3 marks)
8. National Immunization days (NIDs) for polio (definition and criteria for successful NIDs). (3 marks)
9. Characteristics of the Egyptian population pyramid. (4 marks)
10. Management of menopause as a part of reproductive health program. (3 marks)
11. Psychosocial and emotional school environment. (3 marks)
12. Reasons for providing separate health care services for women. (4 marks)
13. Factors that affect behaviour of an individual. (3 marks)
14. Types of silicosis. (3 marks)
15. Harm reduction for injecting drug users as one of the key approaches for HIV prevention. (3 marks)

Best Wishes



4)

### A- Pre - exposure

Vaccination of high risk group is recommended to vaccinate those at risk of exposure. They can be given the Human cell diploid vaccine (HCDV), prepared in culture of human diploid fibroblast cells. 3 doses, 1 ml intramuscular injection in the deltoid region are administered, at 0, 7, 21 days. If the risk continues, booster doses should be given every two years. *Pre (0, 7, 21) # deltoid IM*  
*complications* *side effects* *5 doses*  
*0, 3.5, 7, 14, 28* *0.5 cm IM in*

The vaccine is safe, potent and has few adverse effects.

*Vaccination*

5)

### 3. Vaccination for the high risk groups

Purified meningococcal polysaccharides are available. It is either **monovalent** (A or C) or **bivalent** (A and C) or **polyvalent** (A-C-Y W135). No effective vaccine against group B meningococci is available. The vaccine is given as a single subcutaneous injection for those above 2 years of age. Post vaccination immunity starts after 10 days of vaccination and lasts for about three years. Booster dose every three years is recommended in case of continuous exposure. *epidemic strains*  
*infect source for 2 years* *low antigenicity*  
*droplet*



6) ----- = Yellow -----  
fever

8-9-10) -----

11) -----

### 3. Healthful school environment

Psychology

#### 1. Psychosocial and emotional environment

- The **psychosocial** environment refers to the psychological and social support available within school and in relation to home and community. This support can be informal (friends, peers, and teachers) or formal (school policies, and rules). Psychosocial environment can help students grow into active contributing members of society if they are treated with respect and encouraged to participate. This includes school schedules, Length and timing of school day, amount and timing of homework,...,etc.
- Healthful **emotional** environment is provided through teacher-pupil relationships.

### Reasons for providing separate and special care for women:

- ① Women in the child-bearing age (15-49 years) constitute a large group of the population (about 25% of total population).
- ② Women are a special risk group, because of child-bearing. They are vulnerable to bad socioeconomic and environmental factors.
- ③ Pregnancy related morbidity and mortality are frequent but preventable with simple and cost effective interventions.
- ④ Health problems of mothers and children are interrelated, e.g. Syphilis, rubella, drug intake and smoking have their adverse effects on the fetus.

*Rubella / German measles / HBV*

**A comprehensive approach to reproductive health considers the following components:**



## Factors that affect behavior

There are three groups of factors namely:

**A-Predisposing factors** as knowledge, beliefs, perception, attitudes, and values. These factors provide the rational or motivation for the behavior.

**Example:** if a mother does not know what is meant by exclusive breast feeding and how it can protect the child from diseases and believes in its benefits, she will not be motivated to exclusively breast feed her child.

**B-Enabling factors** as health related skills, income, availability of health resources, time, accessibility and availability to services, community/ government priority and commitment to health, and laws, rules and regulations.

### Example

- If the mother lacks the skill of breast feeding, she will not be able to continue breast feeding and she will resort to artificial feeding (lack of skill).
- Young couples believe in premarital examination, yet the service is not available (Resource).
- People may want to be screened for syphilis but may not be able to afford the cost involved (resource).

**C-Reinforcing factors** as attitudes and behavior of health providers, peers, parents and family members, employers, teachers etc. that will support the new behavior. In patient education settings, reinforcing comes from nurses, physicians, fellow patients and family. In a school education settings reinforcement comes from peers, teachers, school administrators, parents and siblings. In occupational settings reinforcement comes from co-workers, supervisors, union leadership and family members.



# 14) -----

## Types of Silicosis:

There are three different forms of silicosis, roughly related to the intensity of exposure to respirable silica.

1. **Chronic silicosis:** Is defined as radiographic abnormalities that are first noted 15 years or more after the onset of exposure. *simple / classic*
2. **Accelerated silicosis:** Resembles the chronic disease but occurs 5 to 15 years after the onset of exposure to high concentrations of silica. *low intensity - long duration*
3. **Acute silicosis:** Occurs within 5 years of the onset of exposure, it is always caused by massive exposure, and is clinically and pathologically quite different from the other two forms. *15 mg*

# 15) -----

## 5. Harm reduction for injecting drug users

People who inject drugs can take precautions against becoming infected with HIV by using sterile injecting equipment, including needles and syringes, for each injection. *# needle ab*